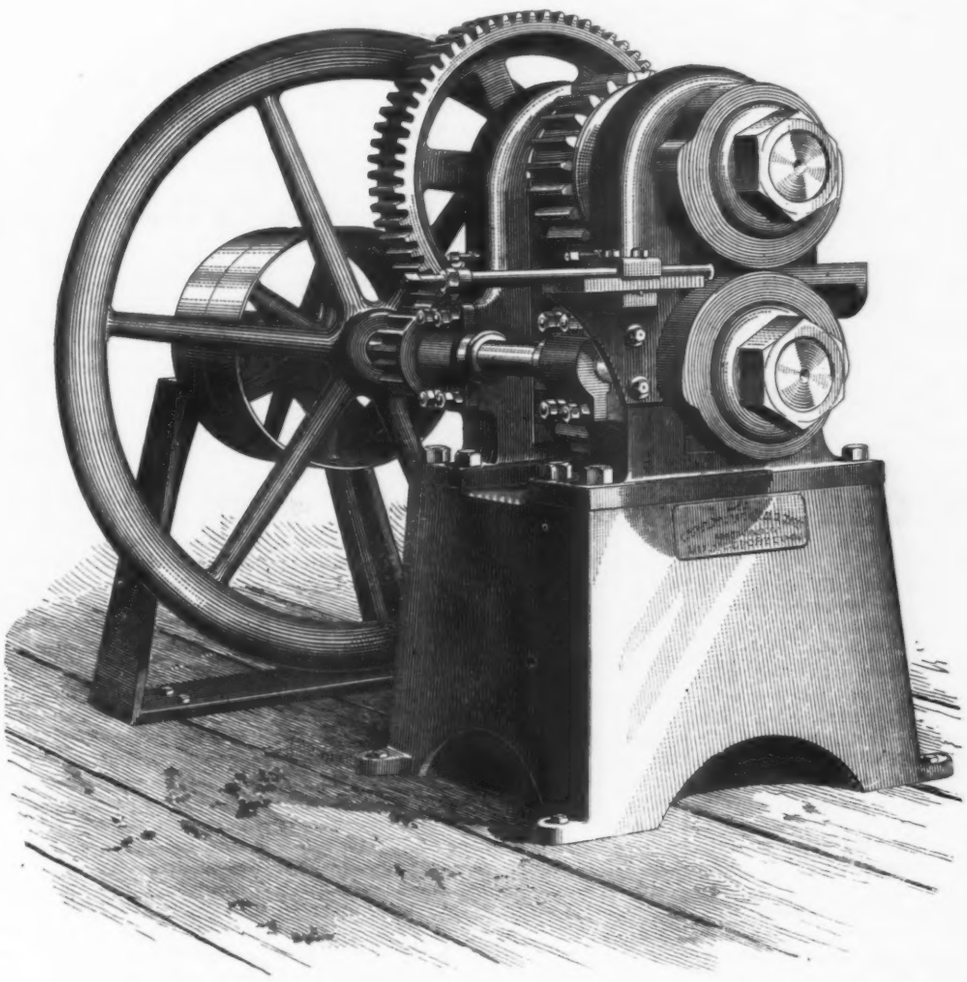
# THE IRON AGE

THURSDAY, MARCH 20, 1890.

### Taper Rolling Machine.

The accompanying cut represents a special rolling mill, built by the Coulter & McKenzie Machine Company, of Bridgeport, Conn., for the Cambria Iron Company, of Johnstown, Pa. This machine is to be used for tapering rake teeth, but by changing the rolling dies it is capable of drawing a gradual taper to 26 inches in length of any degree required on small flat or round steel. The machine is fitted with gauges and guides, the rolls are of the best hammered steel, the gears



ROLLING MACHINE FOR TAPERING RAKE TEETH AND SIMILAR WORK.

are charcoal iron, proportioned about four to one. The back shaft is fitted with a large balance-wheel and a pair of 20-inch tight and loose pulleys. Also an outside bearing. The dies are made of chilled iron, ground to exact taper and held in place by a large feather key and heavy nuts on the ends of rolls. The rolls are adjustable up or down ¼ inch. The whole is mounted on a substantial base or foundation and weighs complete 4200 pounds.

Shipbuilding on the Clyde is suffering from a reaction. In January there were evidences of this, and in February the indications were still more marked. The high cost of material and the decline in freights are the chief causes of this check. As far as new orders are concerned, trade authorities state that in the months of January and February orders for only 6000 tons were booked on the Clyde, the present work on hand in that district being 50,000 tons less than in December last.

### Peculiar Working of a Blast Furnace.*

BY N. B. WITTMAN, BIRDSBORO, PA.

The working of blast furnaces is always of interest to many members of the institute, for which reason I present an account of the working of the furnaces of the E. & G. Brooke Iron Company, of which I have had charge for the past four years. Although there are no phenomenal runs to record, there have been long periods of satisfactory work and also periods—altogether too long—when one of our furnaces has behaved in a way which may be described as "nagging." All the conditions were apparently normal, but only a very light burden could be carried, which, of course, resulted in a high fuel consumption to the ton of iron, as well as increased cost of labor. The two active furnaces of this company have the following dimensions and equipment:

| | No. 2. Feet. | No. 3. Feet. |
|---|---|---|
| Hight | 55 | 60 |
| Diameter at bosh | 15 | 16 |
| Diameter at hearth | 8 | 7½ |
| Diameter at stock line | 10 | 9½ |
| Hight of bosh | 23 | 23 |
| Hight of tuyeres | 5½ | 5 |
| Diameter of bell | 7 | 6 |
| Front | closed. | open. |

Both furnaces are blown with I. P. Morris condensing engines similar in all respects save one, the engine of No. 2 having a steam cylinder of 45 inches diameter while that of No. 3 is 50 inches. In both the diameter of the air cylinder is 90 inches and the stroke 84 inches. In both cases the stock is raised by an air hoist. In No. 2 the blast is heated by three Durham stoves of 28 pipes each, the pipes being 14 feet high and 8 inches inside diameter. No. 3 has two Kent ovens, 40 pipes in each, 14 feet high by 7 inches inside diameter. The ore mixer, which is practically the same for both furnaces, consists of 75 per cent. magnetites and 25 per cent. Lake Superior or foreign hematites. About 40 per cent. of the magnetic ore is similar in character to that of Cornwall, except that it carries a variable amount of free calcite ranging from nothing to 8 per cent. The sulphur in it is also very inconstant, the extreme range being from 1 to 4½ per cent., probably an average of about 2½ per cent. There appears to be no definite relation between the percentage of free calcite and sulphur, the latter being in the form of pyrites agglomerated with the ore, while the former occurs in loose pieces varying in size from grains of sand to masses weighing several pounds The general gangue of the ore is hornblende, with which the calcite is sometimes associated intimately, as

*Presented at the Washington meeting of the American Institute of Mining Engineers.

it seldom is with ore. This ore is the only one used which is inherently troublesome to work.

The points of difficulty are, that the calcite being variable, it is impossible to flux it with any degree of certainty as to the composition of the cinder, and that a large portion of the sulphur is oxidized to sulphuric acid, and combines with the lime, forming calcic sulphate or gypsum, so that it is only practicable to reduce the sulphur about one-half by roasting. The ore disintegrates very rapidly, and there are several soft veins in the mine, so that a considerable portion of it is fine, like sand. It is a well known fact that an ore carrying sulphur in material quantity cools the hearth of the furnace, probably by dissociation of calcic sulphate, and "buckshot" results, while the hearth is "built up." The fuel used is anthracite, with as much coke (usually from 20 to 30 per cent. of the fuel charge) as the price of coke will permit. Dolomite of every uniform composition is used as a flux, for the reason that no calcite of good quality is available. About 1.8 tons of ore are required to the ton of iron, and 0.8 ton of stone is added to form a cinder of approximately 35 $SiO_2$, 12 $Al_2O_3$, 33 CaO and CaS, and 20 MgO.

As an instance of satisfactory work may be cited the record of furnace No. 3 for nine consecutive months, during which time 18,422 tons of iron were made, being an average of 472.36 tons weekly, on a fuel consumption of 1.19 tons to the ton of iron. The best week's output was 531 tons, made with 1.05 tons of fuel per ton of iron. This furnace was filled and blown in as follows: Three stands of oak wood were put above the tuyeres, and the hearth was packed full of light dry pine, saturated with oil. On top of the wood was put, as a blank, 26 tons of coke, with about 2 tons of good gray furnace cinder to flux the ash of the coke and wood. Ore charges were then commenced with 2000 pounds fuel (half anthracite and half coke), 1300 pounds ore, and stone calculated to form a slag of 39 per cent. $SiO_2$. The burden was increased 200 pounds every six charges until the stack was full, after which the fuel charge was 66⅔ per cent. anthracite and 33⅓ per cent. coke. The furnace was lighted at the tapping hole and tuyeres. The wood burned well, and as soon as bright coke appeared at the tuyeres the blast was put on and everything went off smoothly. The volume of blast was increased so that in ten days the maximum was attained. This furnace continued in blast over three years, had all sorts of mishaps due to breakdowns in machinery, which necessitated long stoppages without preparation, yet always worked without trouble, and, for the greater part of the time, with very satisfactory economy in fuel. It will be remembered that the lines of this furnace are by no means modern.

Furnace No. 2 was blown in, as nearly as possible, in exactly the same way, and went off equally well; but the work for the first nine months of the blast—which is the present one—was vastly different. The general features of the process were normal, the stock settled evenly all around, tuyeres bright, gas good and plentiful, cinder hot and of proper basicity, but there was no indication that a heavier burden could be carried. The charge at the time of blowing in was: Fuel, 2000 pounds; ore, 2600 pounds; stone, 1240 pounds. After a few days an attempt was made to add more burden, although the iron was only an ordinary gray forge, but after the additional ore—60 pounds—came to work the iron was closer in grain, and evidence was soon given that the furnace was overburdened. The only abnormal feature was low pressure of blast, the gauge registering only 4½ pounds per square inch for two or three weeks after blowing in, and gradually rising to 5½ pounds, where it remained for about three months. The usual pressure with three-fourths anthracite and one-fourth coke (the fuel mixture then in use) is 7 to 8 pounds, and the low pressure indicated the possibility of working up the center, or "ring scaffolding." To ascertain whether this was the case, and at the same time endeavor to correct it, a fuel blank of 20 tons was charged, with scrap enough to keep the iron from becoming too gray.

When this had been in the furnace about ten hours the speed of the engine was reduced three revolutions, so that there might be a tendency of the blast to work up the walls and loosen any matter which adhered to them, and get it into the hearth about the time the extra fuel reached there. The presence of the blank in the melting-zone was manifested by the cinder in about 20 hours after it was charged at the tunnel-head, and after 60 charges or rounds had been put in on top of it (the volume of which would occupy the space between the stock-line and bosh), showing that the melting-zone was in the region of the bosh, and that no considerable accumulations were on the walls. The working of the furnace was not at all improved by the blank, or changed in any way that was perceptible. During the time from blowing in, November, 1888, to March, 1889, the best week's work was 445 tons of iron on 1.3 tons of fuel per ton of iron, and the average production for five consecutive weeks was 431 tons, requiring 1.3 tons of fuel per ton of iron. The pressure still continued low. After some time it was discovered that the collars connecting the pipes to the mains in the hot-blast stoves had "raised" in all the ovens, and that several of them were split, so that it became necessary to give them a thorough overhauling, which occupied the greater portion of three weeks. While these repairs were being made two ovens were used, and the volume of blast had to be diminished in order to keep up its temperature.

It may be mentioned here, as a tale of misfortune, that when one oven was off, and about 12 hours before it could be made ready for service, a violent rain storm occurred; a water conductor, which passed over one of the ovens, became disconnected at a joint, and the water poured on the roof of the oven and found its way between two plates, which had warped somewhat, in a sufficient quantity to crack a piece out of one of the pipes. The piece was large enough to cause the hot-blast valve to drop, and, the furnace being full of cinder at the time, the belly-pipes all filled. This necessitated a stop of about four hours to clean them out, after which we were obliged to run 12 hours with one oven of 28 pipes and a blast temperature of 600°. Finally the ovens were all in good shape again, and some improvement was noted in the working over that immediately preceding the time when repairs were commenced, but not nearly so much as I had hoped for. The pressure had gradually risen to 7 pounds, but the fuel consumption per ton of iron remained high, and it was not long until the production fell of to less than before repairs were made, and the fuel rose to still higher figures. The pressure remained at 7 to 7½ pounds per square inch.

During the months of July and August the results were most discouraging. The average production of five weeks during that time was 361.8 tons, each requiring 1 508 tons of fuel. The worst week's work was: Iron, 356 tons; fuel rate, 1.6 tons. The only abnormal feature apparent was that during casting the cinder would run out very hot and fluid, separating perfectly from the iron, until about one-third of it had run, then a mass of "buckshot" would follow, often choking under the skimmer, and causing iron to run out into the cinder runners. This was followed by about an equal amount of hot fluid cinder, entirely free from buckshot. At some casts no buckshot was made, but when it did appear it was almost invariably in the way stated. This was a very unusual thing. In our previous experience with buckshot it had made its appearance with cinder visibly cold, the hearth would soon build up, and iron would be thrown out of the cinder notch during flushing. In this instance, however, the cinder which preceded and followed the buckshot was hot and fluid, the hearth did not build up, and no iron was thrown out of the cinder notch. The appearance of the cinder was unusually good. It is our practice to ladle out a sample of each flush of cinder while it is running, and pour it into a scorifying mold, so that buttons from the various flushes can be compared. At this time there was scarcely any difference noticeable between flushes. One sample would represent the entire day's work; yet at some casts 2 or 3 tons of buckshot would run out and at others none. The top of the furnace was as cool as could be expected with such a light burden—about 600°, when the fillers were at work, which would increase to 700° or 750° when they stopped for an hour.

No gas analyses were made, but the gas was clean and good. No firing was at any time necessary under the boiler, and the bleeder was seldom opened. The slides on the gas-valves of the hot-blast chambers were seldom moved. Everything seemed right, yet the results showed that something was seriously wrong. The coke strike occurred about the time we were most troubled with buckshot, and it was necessary for several days to increase the proportion of anthracite to 87½ per cent. This resulted in less iron and more buckshot. I mention the fact, as it will have a bearing later on. During the first week in September a slight improvement was noticed; no change had been made in any particular, and there was no reason to think that it was more than a temporary relief, after which a relapse might at any time be expected. The relapse, however, did not come. There was no more buckshot, and the iron indicated that more burden could be carried. The iron, at the time when the improved working commenced, was peculiar. It was only a good gray forge in grain, but there was an appearance about it difficult to describe, though familiar to those who grade iron by its fracture, which indicated that it was very much grayer than the grain would lead one to suppose. Burden was added in 40-pound lots, with stone in suitable quantity, and when it came to work evidence was still given that a little more could be carried. This was done in 40-pound lots at first, and 80-pound after there seemed less danger of overdoing the matter, until 800 pounds more ore was carried by 2000 pounds of fuel than had been possible during the summer. The period of transition from light burden to heavy occupied about three weeks, during which time the iron only varied in grain from very gray forge to close gray forge. The volume of blast, measured by piston displacement, was steadily maintained, and the production increased for the five weeks ending with October to an average of 464.6 tons of iron, made with 1.206 tons of fuel per ton of iron. The best week was 507 tons of iron, made on 1.18 tons fuel rate.

On October 1, when the price of coke advanced, the proportion in the mixture was reduced to 20 per cent., with which the best work was done. It was further reduced to 12½ per cent., which had caused much trouble during the summer, but at this time it had no such effect, and 488 tons of iron were made in a week with 1.2 tons of fuel. After running two weeks, however, it was deemed advisable to re-

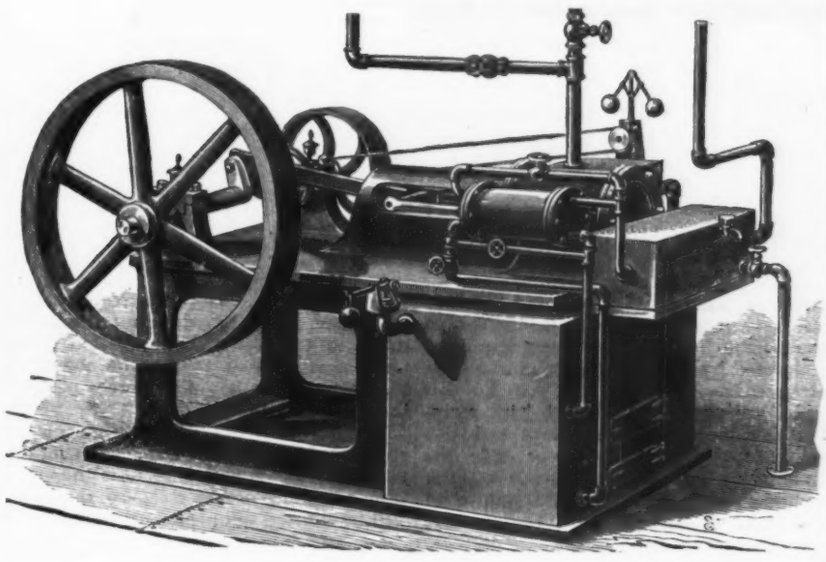
turn to 20 per cent. of coke, the production having dropped to 453 tons; and now the production averages 69 tons daily, and the fuel is fairly constant at 1.2 tons per ton of iron. During the summer, when the results were most distressing, the process appeared singularly uniform, and no evidence of scaffolding could be detected. Now there is no uniformity whatever; the stock slips sometimes from 4 to 6 feet at flushing; the cinder varies from bluish-white with stony fracture to black with vitreous fracture, yet is always hot and fluid. The iron varies from foundry to mottled between casts, and the cinder is but a poor guide, as the gray cinder sometimes makes close iron, and the dark, glassy cinder does not always make hard iron. There is much more evidence of scaffolding now than there was during the summer, but the cost-sheet has a much healthier look.

It is likely that, apart from atmospheric conditions, the ordinary causes which affect irregularities of working are: Arching of the stock, thereby forming a temporary scaffold; dropping of unprepared stock, which has been adhering to the walls as a fixed scaffold; and filtration of fine ore through the coarse stock, reaching the hearth in the state of ore and desiliconizing the iron, thereby lowering its grade. I was unable to detect any form of scaffolding, and as the proportion of fine ore in the mixture has not changed, it is not likely that it influenced the process. When a furnace does not work economically, it is customary to say there is a scaffold; but it has seemed to me that this term is often applied to express an abnormal condition, the cause of which is obscure. Scaffolds, in order to exercise a material influence on the process, must occupy considerable space; and, although our means of estimating the working capacity of a furnace between the stock-line and the melting-zone are very crude, it is at least possible to ascertain whether there is a very considerable contraction in the cubic capacity contained between the stock-line and bosh or not.

In furnace No. 2, large fuel blanks have been charged, from time to time, when it seemed desirable for any reason to do so; and after 58 to 64 ore charges were on top of the fuel, its presence became apparent in the melting-zone. There has been no variation observed in this respect at any time during the blast. At one time, during a former blast, when the furnace was working badly, a fuel blank would work after 27 to 30 charges were on top of it. It was not difficult to determine then that the melting-zone was high, and that a scaffold existed. It has been my practice to maintain a uniform volume of blast, measured by piston displacement, under all circumstances, and to distribute the current according to the manner in which the stock settles on top. If the settling is even, tuyeres of equal area are used all around. If there is a marked tendency to settle faster on one side than another for a few days, nozzles are put in the tuyeres under the low side, and the blast, flowing in the direction of least resistance, naturally goes in greater volume through the large tuyeres, and causes the furnace to work faster on the side which was high. In this way incipient scaffolds are moved, and dangerous ones are not likely to form suddenly.

The practice of reducing the speed of the engine whenever the cinder becomes sharp I have always regarded as likely to form scaffolds on account of alternately raising and lowering the melting-zone, and, as I could never see how heat could be generated by diminishing the rate of combustion, I have avoided it.

The working of the furnace in question has been a mystery to me, and this account of it has been written in the hope that it may meet the notice of some among the members of the institute who have had similar experience, and, more fortunate than I, have ascertained the cause. It is not usual to proclaim one's poor work in all its details and confess ignorance of its cause; but if one cannot get light without opening the windows, they had better be opened, though other people may thus be enabled to look in.



HOT-AIR ENGINE.

The Goodrich Steamboat Company, of Chicago, is now building at a cost of $160,000, a steamer for Lake Michigan, which will in many respects resemble an ocean steamship. She will have two masts of a marked rake and will carry sail when the wind is favorable. This steamer, which will be called the Indiana, will be put on the Chicago and Milwaukee run in May, and the City of Racine, which will also be given a second mast, will go on the route between Chicago and Grand Haven. Capt. T. G. Butlin, who became president on the death of Captain Goodrich, the founder of the line, a few years ago, has retired and is succeeded in the presidency by the son of Captain Goodrich, who has recently attained his majority and who has inherited his father's taste and aptitude for lake vessel management.

## Hot-Air Engine.

This engine is provided with an ordinary cylinder and hot-air chest in which is a slide-valve of the usual form operated from the main shaft. Into the hot-air chest leads a pipe provided with a valve and connecting with the upper end of a hot-air reservoir, below which is a heater placed above a furnace, all these parts being inclosed in a case supporting the cylinder. The reservoir is provided with a number of parallel plates extending through the bottom on to the bottom of the heater. Into the heater opens a pipe leading upward and connecting by a discharge-valve with one end of an air compressor arranged alongside the cylinder and operated from the crosshead of the main piston-rod. On the other end of the air compressor is a discharge-valve opening into a pipe leading into the ash-pit of the furnace. In the heads of the air-compressor cylinder are placed inlet-valves connected by pipes with a closed reservoir located inside of a cooler placed on the outer end of the main cylinder. Water flows through the cooler to cool the air.

When a fire is started in the furnace the air in the hot-air reservoir is rapidly heated. When the pressure in the reservoir is sufficient the valve is turned to allow the air to pass to the hot-air chest and cylinder and operate the piston in a manner precisely similar to that in the ordinary steam engine. The exhaust may be discharged into the open air or into a room to be heated. Through one pipe the compressor discharges air into the furnace to aid combustion and through the other into the heater, from whence it passes to the hot-air reservoir. The arrangement of the pipes and valves is such as to permit the operator to increase or diminish the supply of cold condensed air to either the heater or furnace. It will be observed that the air in this engine, which is the invention of Jerome H. Chase, of Buffalo, N. Y., is first rapidly cooled, then compressed and forced into a heater, where it is subjected to the intense heat of the furnace. Another noticeable feature is the fact that the engine is double-acting.

## Does Farming Pay?

Answers to this question were obtained from nearly 2000 farmers scattered through the States of Missouri, Illinois and Kansas. The reported interviews fill three pages of the St. Louis *Globe-Democrat* and it appears therefrom that the question of profit in farming is a local one, governed by varying conditions. "A few things, however," the editor remarks, "appear to be true in all parts of these three great agricultural States. It is manifest, for instance, that the production of corn does not pay, unless it be fed to live stock. The average cost of the product is put at 20 cents a bushel, and that is more than the Illinois, Missouri or Kansas farmer can sell it for. But by using it to fatten cattle and hogs, he may realize for it from 25 to 40 cents per bushel, and that implies a reasonable profit. Fruit seems to pay as a rule, but it takes time, care and money to secure an orchard, and the average farmer cannot afford to make such investments. The making of butter and cheese is profitable when there is a convenient market, and some have done well with poultry. On the whole, it is probably safe to say that the most successful farmers are those who diversify their operations, instead of trusting entirely to one crop, like corn or wheat. The want of capital is one of the worst drawbacks in the business."

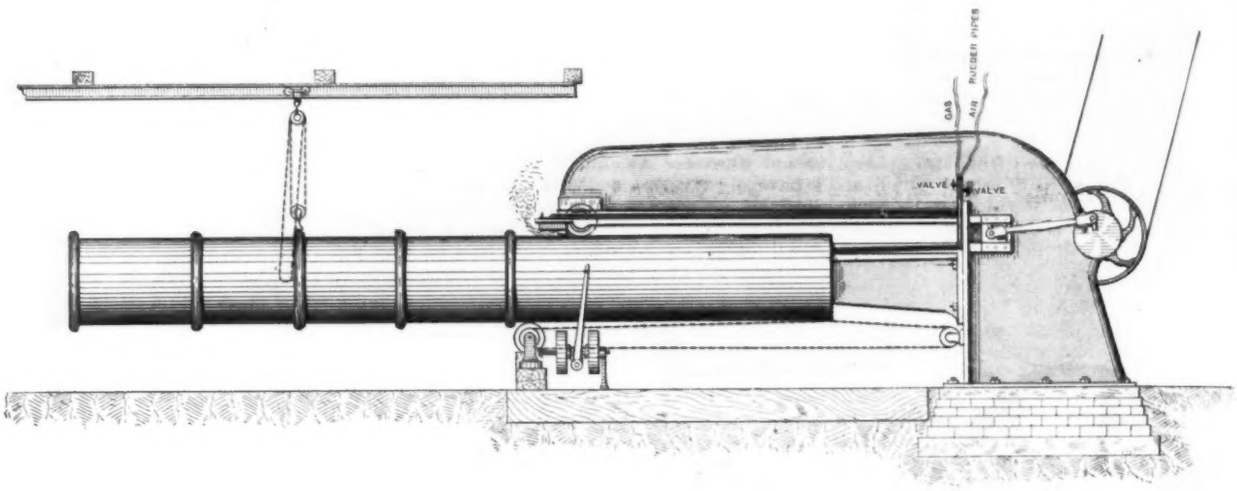
## Making Welded Pipes.

With the economical production of steel, many of the constructions heretofore made in cast iron are now being displaced by this stronger and stiffer material. This fact is particularly noticeable in the use of heavy cast-iron pipe of large diameters for the conveyance of water, gas and oil. By the substitution of welded steel pipes a conduit is obtained vastly superior from every standpoint to the heavy fragile cast iron pipe. A steel pipe of about 25 per cent. of the weight of a cast iron one of the same diameter will resist a greater internal pressure and, being more elastic and flexible, will not be subject to rupture or breakage so easily. The expense of freight and general handling will, of course, be in the ratio of the weights, while in addition the almost absolute immunity from breakage is a valuable feature, influencing largely a more widespread adoption of the lighter construction.

The attention of those intimately engaged in hydraulic enterprises is being directed to the production of a conduit which shall be economical, practical and durable, and the advances of the art in this direction give early promise of success in supplying a steel pipe having a welded seam that will be as readily obtained as a commercial production as the smaller drawn tubes of the same material.

The process of which we herewith present drawings is one invented by Robert Cartwright, of Rochester, N. Y. The endeavor has been in this machine to reduce the amount of skilled labor required to a minimum, and in addition the making of the operation continuous instead of intermittent, and, further, to make the plant automatic and as mechanical as possible. The general features of the machines are two compound air and gas furnaces, one internal and one external, immediately in advance of internal and external rolls, all being mounted on a frame to which a reciprocating motion is imparted by a crank, the seam of the sheet being welded being drawn between the furnaces and rolls as the weld is made. The gas and air are supplied through pipes attached to the reciprocating frame; and as their rear ends are joined to rubber hose, the movement of the frame is made possible. The sheet having been rolled to the required diameter, is held rigidly in shape by suitably designed removable clamps on the outside and compression rings on the inside immediately under the clamps. These clamps and rings are quickly removed as the weld advances and without requiring the stoppage of the work. In starting to weld a seam the blow-pipe jets of the furnaces heat the material, and as the pipe is drawn in the part longest in the flame comes to welding heat and is brought between the rolls and closed down to a perfect weld, the rolls being adjustable to suit different thicknesses of material. This in general is the method which we shall proceed to describe a little more in detail.

Figs. 1 and 2 show in perspective and section the general arrangement of the welding apparatus. The machine consists of a base, A, formed with horizontally projecting arms, B C, so arranged as to create an elongated slot-way opening into the body of the machine. On the rear of the machine is mounted a crank pulley, connected by means of a pitman to a slide arranged as shown in Fig. 2. To this slide are connected parallel bars, reciprocating in suitable guideways and carrying at their extreme outer ends the welding rolls and heating furnaces. The welding roll shown in Fig. 3 is guided on that part of the frame of the machine represented by the letter A, Fig. 3. The sides, B B, of the frame in which the welding roll is journaled are reciprocated by means of the crank motion just described. Mounted in this frame is the main arbor, C, mounted upon which is the central welding roll, E, and two supporting rolls, D D, all of which have friction bearings. These operate entirely independent of each other, and by their friction upon the main arbor they cause that to rotate more or less, the result being that when in operation each roll is constantly wearing against a different part of the main arbor, so that the latter is never worn out of true. The supporting rolls D travel upon a track held adjustably to the frame by means of the bolts, as shown. By adjusting in a vertical direction the rolls may be adapted to work upon thick or thin work, especially when welding the joint of a pipe, in which case one welding roll is used inside and one outside of the pipe, both being in the same vertical line. It is evident that this construction transfers all the strain of the welding pressure upon the roll to the arbor and thence to the supporting rolls and trackway, and that the reciprocating movement of the roll does not abrade the metal at the weld, the operation being more nearly allied to that of annealing the hot metal at the joint, thereby preserving the fiber intact.




MACHINE FOR MAKING WELDED STEEL PIPES.

The gas furnaces shown in Figs. 4 and 5 are carried by the same frame carrying the rolls, and are intended to heat the metal just in advance of the rolls, so that they will be allowed to operate upon the metal at the highest temperature. The outer shell A of the furnace is of the shape shown in the drawings. Its base (top in the drawing) is closed by a flat disk, provided with openings through it adapted to receive the pipes. The contracted end or apex of the cone is arranged to receive an asbestos or soapstone issue-piece, through which are formed multiple gas-ducts substantially opposite to each other. Within the body is placed a shell-shaped partition, B, fitting tightly at one end against the top, by which it is closed, and at the other end against the issue, which also closes it

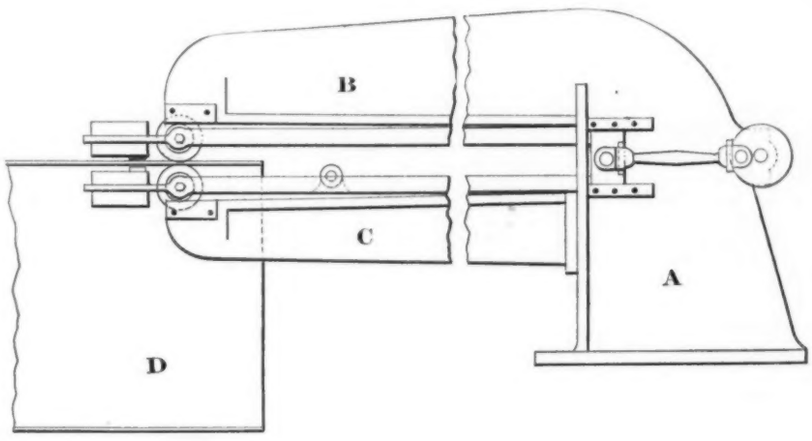



*Fig. 2.—Side Elevation and Section.*

except that the opening in the contracted end of this partition coincides with the issue. The space inside the partition forms the air chamber into which the air outlet pipe opens, and within which the air is temporarily stored before using. The space C between the outside of the partition and the inside of the body

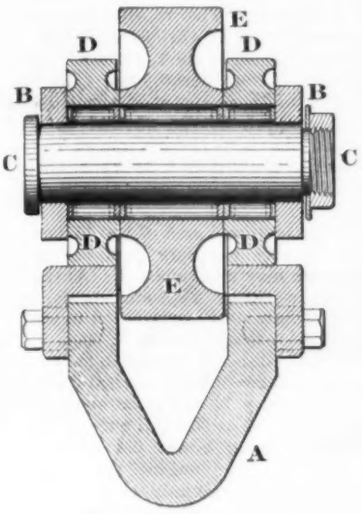



*Fig. 3.—The Welding Roll.*

constitutes the gas chamber, into which the gas is led, and from which the gas is permitted to escape through the openings shown in dotted lines at the bottom of the chamber B, and just on top of the issue. It will be observed that the air passing from the chamber B and the gas passing from the chamber C, are mixed and commingled in the issue, which serves the purpose of a mixing chamber. The combustion of this mixed gas and air generates the most intense heat, which heats the body A, which in turn radiates its heat inwardly into the chamber C, thereby imparting a great degree of heat to the gas contained therein, so that when the latter leaves the chamber and meets the air issuing from the chamber B the resulting flame is of a most intense description. The flame coming from the issue is directed against the seam to be welded, which is quickly and by this means economically heated to the proper point.

In Fig. 6 is shown a hub and spigot joint calked with lead. This joint, aside from the cheapness and facility with which it may be made, has another important advantage in its ability to allow for expansion and contraction due to changes of temperature. It is intended by Mr. Cartwright to produce a welded steel pipe with its hub and spigot in one construction without rivets. In order to accomplish this the hub will be spun or enlarged on one end of the pipe and reinforced with a steel band or ring, as shown in the drawing, to counteract the upsetting tendency of the lead in calking

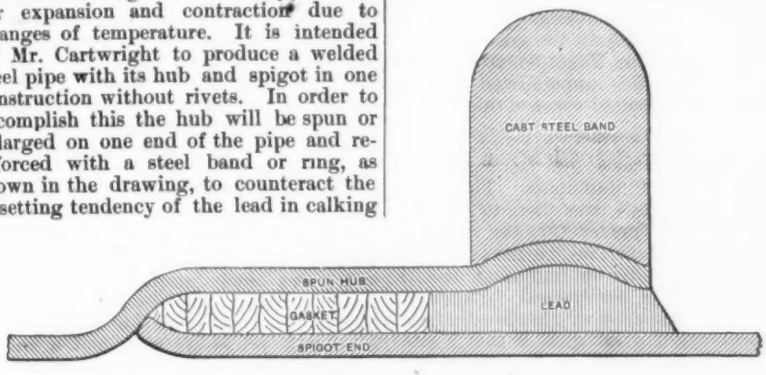



*Fig. 6.—Hub and Spigot Joint.*

the joint. As the spigot end merely requires such form as will restrain the tarred rope or oakum from being driven through into the pipe, a trifling flare of the end accomplishes this.

The advantages possessed by the method just described of making welded steel pipes will be apparent when the operation heretofore pursued is remembered. By the method now in common use the welding is done intermittently, the furnace being applied to a short section, which, after being welded, is then closed down by hammers or rolls, the furnace having been removed. The furnaces are again applied and the operation repeated. These successive heatings and coolings involve loss of time and heat, and necessarily have a more or less injurious effect upon the metal.

## A Physical Prophecy of North America.

A new method of estimating "The Future of Our Country" appears in an original volume entitled "Cosmonics of the United States." It is a synopsis of a series of lectures by the author, O. M. Babcock, of Philadelphia. Only a limited number of proof copies have been printed, and these are placed in the hands of a chosen few for examination. We are especially permitted to express the following views obtained therefrom, a portion of which are extracts, and indicate the plan and purpose of the work:

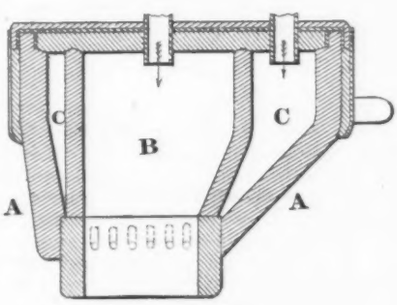
"The tide of commerce, the development of industry, the distribution and concentration of material wealth and political power, the independence and union of the States, the freedom and comfort of their people, are all considerations under the subject here presented."

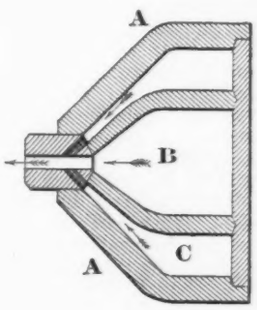
"The transit of Venus across the sun's disk is no more certain, and of vastly less importance to us, than the transit of *empire* across the face of North America."

The path of this transit, or civilization's center-line of march around the world, in crossing America is shown to rise from the fortieth to the fiftieth parallel in a diagonal curve, or from Philadelphia to Puget Sound and the Gulf of Georgia. Chicago is on the line of this axis, while St. Louis is on the line of the transverse belt connecting Hudson Bay and the Gulf of Mexico—approximately the ninetieth meridian.

The crossing of these axials is on the east bank of the Mississippi River, and is a favorable point of compromise between the geographical center near Omaha and the great commercial centers of the future, Chicago and St. Louis, both of which, the author asserts, are destined always to be the chief cities respectively on the only two grand highways of commerce, extending from the ocean to the interior, arranged in the "order of nature." The future transit and intercourse between these two cities is destined to exceed all present estimates, while the intervening space will be densely populated, and Illinois, in which the first is located, will rise to ultimate supremacy as a State.

The centrality of Missouri establishes her superiority over nearly all other States in this respect, while, geographically, Iowa holds first place. These three form the tri-State nucleus or tripod of power in our political unity. Whatever point may be hereafter selected because of its location as being central now lies within one of these three States. Should our national capital ever be transferred from Washington it will be located somewhere upon this area. The author does not state, but he leaves the way clearly open for inference, that the point of crossing of the two great axial belts above alluded to—or not far from it—is the most favorable site. That the island in the Mississippi on which is erected our national armory is so peculiarly situated indicates a natural pre-arrangement according to the plan laid down in "cosmonics." Evidently the intention is to show by this forecast that the locality under consideration is really the political center, all of which is eventually to be one consolidated country "from Panama to the Polar Sea."




*Figs. 4 and 5.—The Gas Furnaces.*

"The central section" refers to all that portion of the continent lying now within the United States between the crests of the Alleghanies and the Rocky Mountains, north of the thirty-fifth and south of the forty-ninth parallels and the Lakes. Beyond this boundary the slopes are generally oceanward, and constitute what he denominates the border territory. This is divided into the Eastern, Southern, Western and Northern sections. Of the last named we now have only Alaska, a situation which will continue until the Dominion and the States are united under one form of government.

Thus we have an illustration of the author's arguments, or rather his conclusions, which, instead of being guesses or speculations, are founded in obvious conditions and circumstances which are known to be true, hence they are in the form of demonstrations with lines and points everywhere defined. According to these views "the great central section" is destined to contain one-half the population of the entire continent, because of dense population and great fertility with continuous habitable area. Like the flow of its waters, so will be the sentiments and sympathies of its people, because their interests are identical and they will be solid for union among the States;

while, on the contrary, the great border may be diversified in sympathy and sentiment as the waters are distributive and flow into different oceans. Therefore they will never be able to combine for conquest of the "solid center."

For like reasons the great cities of the interior are likely to become larger than those on the outskirts, as in the former trade will be concentrative, while on the exterior it will be distributive. This will be the case more and more as we become a home-producing people and foreign goods relatively fall off in the supply of American markets.

The more alike the genius, habits and customs of different peoples, the less is the demand for exchange of commodities, while unlikes in character of peoples and productions call for more exchanges, and hence a larger trade. In view of this fact our Western seaports, and their commerce with Asia, have before them a prospect of greatness not even conjectured. This prospect is made still stronger by the fact that our Pacific harbors are few and far apart, therefore necessitating more trade at each in order to supply the demands of a commerce proportioned to her length of coast, area of inhabitable slope and magnitude of commerce on opposite shores of the greatest ocean. As an offset to these conditions it is worthy of note, and very remarkable, that "Africa lies further west than Asia and Europe, while South America lies further east than North America. By this circumstance the waters between them are very much narrowed on the Atlantic side, and correspondingly widened on the Pacific side. The mountains range chiefly along the Pacific and Indian Oceans, causing narrow slopes on those sides and consequently wide countries toward the Atlantic Ocean, into which flow the waters of both. The great breadths of land, therefore, lying east of the Andes and west of the Moon and Dragon ranges are to trade principally through Atlantic waters. With the United States this trade will be through parts east of the Rocky Mountains."

"The development of Southern continents under American and European influence will bring forward an extensive commerce, much of which may be tributary to our central cities by way of the Gulf of Mexico and Mississippi Valley independent of the Atlantic Coast cities."

These quotations illustrate the author's method of expressing his views. By the aid of ingeniously devised charts the reading is more easily understood, while a less amount of explanatory matter is required. Evidently the convenience as well as the interests of business men has been studied in the preparation of a work for the benefit of young people.

Instead of using labored arguments to convince his readers, the writer of this little volume proceeds on the assumption that his views are clear and his assertions are so obviously true as to need no additional proof. Some of his assertions at first appear extravagant, but each advance in the mental panorama unfolds a new idea which passes into a conclusion before it is left for the next, and when the end is reached the chain of evidence is complete and there is no demand for a summing up of the argument. The reader finds that he has been carried along and now stands side by side with the writer, albeit, perhaps, under protest, because his interests or local pride are antagonized. Interests and prejudices are not respected by the author and his work bears out the assertion that "he has not received aid or sought favor from any source except the source of all truth and light, lest any deviation from accuracy or honest convictions might be suffered or attempted. Fidelity to nature, and hence to truth, however, in showing the future of our country, must give to some lines and localities pre-eminence according as they are, in the order of development, destined to excel."

The inference must not be drawn therefore that the mention of the great central region as a commercial and political unit, with Chicago and St. Louis for its *nuclei* or, according to the author's coinage, the "metropoli"—referring not only to the center, but to the continent—is through any influence brought to bear by these cities or by persons to have them specially mentioned. Their position demands it; while Puget Sound, the Gulf of Georgia and Strait of Fuca—waters in common—form a grand subject for word painting almost incredible until seen as here described. Our space will furnish only the very short quotations which follow: "Long Island Sound and Puget Sound will always find in the great Mississippi Valley a sounder basis wealth than either will in the great city of its counterpart; and yet these two cities, so corresponding in their relations to both sea and shore, extremes as they are, will probably become the principal media of interoceanic transit.

"New York may yet find in a new city—perhaps not yet named—on the Pacific Coast at Puget Sound, that co-operation which will command athwart our country the principal commerce between Eastern Asia and Western Europe—the extremes of the Old World." "London and Liverpool are further north than Puget Sound; then why may not the latter nurse a great commerce on its bosom and smile in the face of great cities where nature has supplied all the conditions of trade, both local and external?"

Referring again to the "transit of empire," the following more than hints at great possibilities in the Northwest: Rising from the fortieth parallel on the Atlantic to the fiftieth on the Pacific, as yet undefined, but mentally projected beyond the Mississippi in a "grand ascent, as it speeds from the ninetieth meridian westward and northward midway between Topeka with Kansas City and St. Paul with Minneapolis—counterparts in importance and the next luminaries of magnificence beyond St. Louis and Chicago—Denver and Winnipeg are offsets still further on and wider apart. Between them runs the axis on the north side of the Black Hills and through a region almost starless to the naked eye, but full of interesting search as we sweep the horizon with our horoscope and catch glimpses here and there of new luminaries coming into view—as yet but points of light.

"In the distance a stellar mass appears, somewhat nebulous, but with clearly defined *nuclei*, which we shall study with growing interest as approach dispels the mist, and a cluster of cities stands revealed, rivaling in magnificence the great marts of Europe and making Puget Sound to glow with an effulgence unparalleled by any harbor on the broadest ocean of the globe."

---

Dr. Gatling's new gun factory will be built in or near Philadelphia. There is a movement on foot over there to try and make the old Quaker City the practical center of the Government's naval power, and that would be an important post if the new navy is constructed. The reason for the selection of that location for the foundry for great guns is that a site in New York would be too expensive. Metal and coal—that is, material and fuel—are cheaper and more quickly obtainable at Philadelphia. The kind of metal used for the big 10 and 12 inch Gatling guns will be open-hearth steel.

---

The Louisville and Nashville Railroad has issued its sheet on rates of pig iron, which took effect on the 15th inst. The rate from Birmingham to Cincinnati is $3.30, and to Chicago $4.55.

## Cost of Electric Welding.

Recent tests were made in England with a Thomson electric welding plant to ascertain the time required for welding, the power consumed and then estimating probable cost per weld of the several sections of weld tried. With a view to test rapidity, 20 pieces of 1-inch round iron bar with rough ends were welded together in 13 minutes. The results showed that each such weld might be well done in 1⅓ minutes instead of the 1.3 minutes actually taken, or in considerably less than 2 minutes per weld when a good swage finished weld is required. In another of several tests 10 pieces of 1¼-inch round bar were welded in 12½ minutes, or 2½ minutes per weld. Commenting upon this the *Engineer* says:

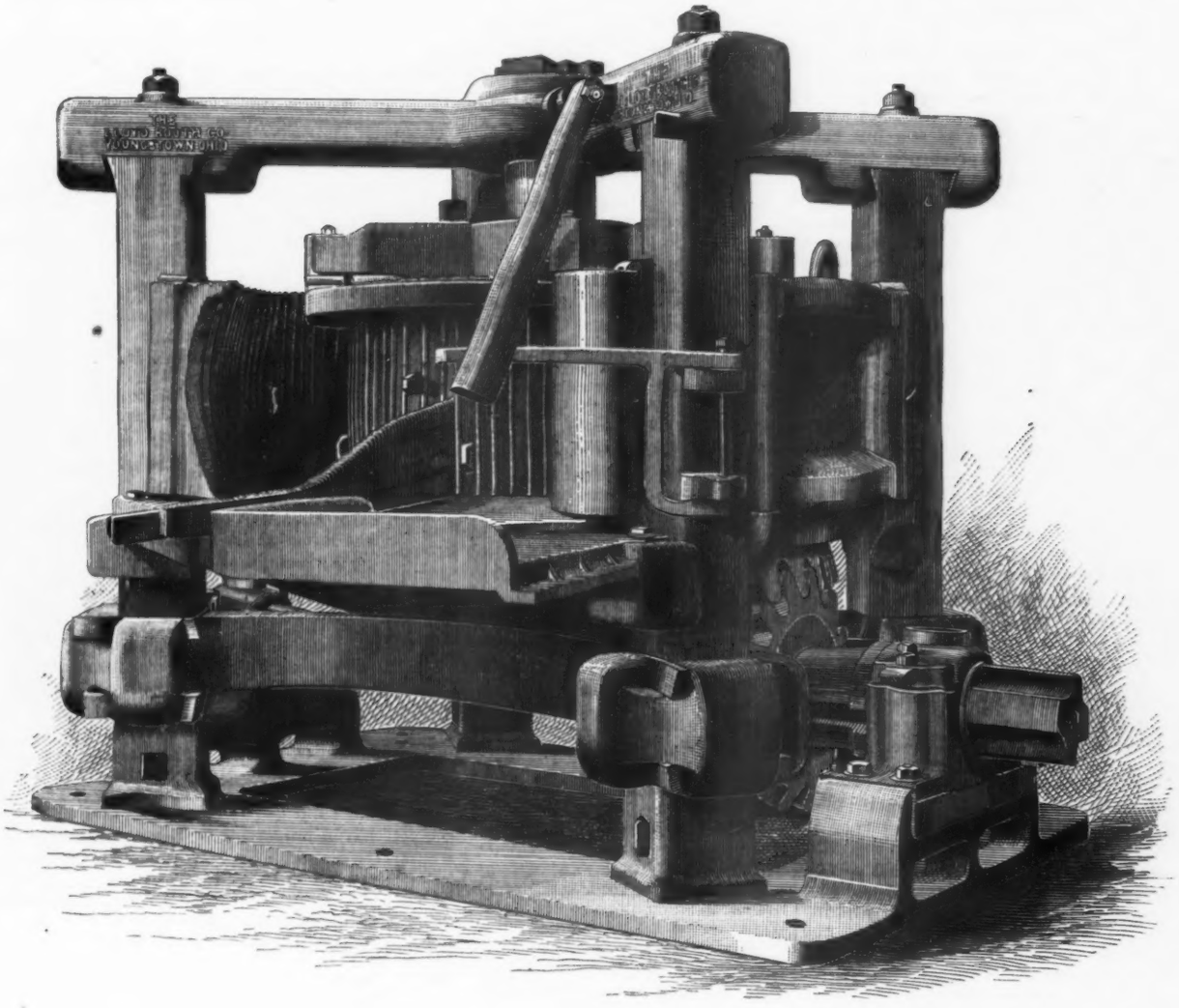
As the sectional area of the 1¼-inch bar is very nearly 1 square inch, the cost of this work may be examined. At the same rate of working 24 such welds, or 48 pieces of bar, could be welded in an hour. The cost for labor would be, say, 1/2, or 0.58d per weld of 1 square inch area. The indicated horse-power absorbed during this same time may be taken as about 22 as a maximum, but as the full current is only required during about 0.4 of the whole time, and as the engine runs light for nearly half of the whole time, the power to be debited to the welding must be taken as very much less than this. When the current is not being used the friction diagram, which includes engine shafting and machine friction, represents about 2.75-horse-power; but taking the speed at which the engine runs when the full current is on, this falls to as low as 2 indicated horse-power. We must therefore charge the process with a mean of about 12 indicated horse-power. Where only one machine is at work the cost will, of course, be more than is represented by 12 indicated horse-power, but it is fair to assume more than one machine worked by an ordinary works engine. Taking the average consumption of coal for such an engine as 3 pounds per indicated horse-power, we have a consumption of 36d per hour and for the 24 welds, or 1.5d per weld. The total cost per weld would thus be 2.8d. Before drawing a conclusion from this, however, it must be noted that on a previous day 80 welds were made in 1¼-inch iron in 177 minutes, equal to 245 per day of nine hours or 2.22 minutes per weld, and the cost for labor is thus reduced upon doing a number. The reduction in cost is, however, not as much as is represented by the relative times per weld, namely, 2.2 and 2.5 minutes, but a large proportion of this saving will be made. Making such allowances as are necessary, and such as we know the conditions of the experiments will permit, so that the comparison of the cost of such welding with that done in the smithy may be a fair one, it may be taken that the cost of electrically welding such bars is about 1.85d per square inch. The cost of the plant and its maintenance must, however, be considered in arriving at the total prime cost of the welding. We have not made any precisely similar lots of welds by the ordinary method for the purpose of comparison, and such work does not occur in ordinary practice, but judging by the cost of other work for which certain piecework prices are paid, and a known quantity of coal used, we may assume that the 1¼-inch round bars in numbers would be welded for about the same or a slightly higher sum in the smithy. Here, however, the comparison ceases, for by the electrical machinery the number of welds which can be done per day by a pair of men will in many cases be doubled. This is where a very great advantage is achieved, the earning power of every man employed, of the capital in the works and the quantity of work which a given works can turn

out per year is thus enormously increased. Still greater advantages are, however, to be secured for many kinds of work where the precision of the electric welding is of high importance. By the electrical apparatus the welding heat can not only be obtained at any determined place and limited with precision, but the "heat" is under the eye of the workman, who can adjust it with the greatest exactness and with perfect control. He can see exactly how the metal is behaving and work accordingly, and hence the electrical method is most excellent for welding steel pieces together, or steel to iron; and wherever it is necessary to obtain a welding heat at a precise point, and to confine the heat to this part, no other method can approach it in any respect whatever.

An improved gravel car has been invented by F. D. Adams, car-builder for the Boston and Albany Railroad. The cars are mounted on a wrought-iron frame, with a wheel base of 11 feet. The car body is swiveled on two large castings, and is held in place by chains attached to the side sills of the car, passing down to the truck frame, where they go under suitable pulleys and thence back to the car body, where they are wound around horizontal shafts, which are operated by worm gear and vertical worm shafts at one end of the car. By means of a lever the chains on one side are slackened, and by giving a few turns to the vertical worm shaft the car body is tipped up the other side, automatically unlocking the side and allowing the gravel to quickly unload.

## Rotary Squeezer.

The accompanying engraving represents a rotary squeezer built by the Lloyd Booth Company, of Youngstown, Ohio, that is now working very successfully in more than 20 of the leading mills in different parts of the country. One of the special features of this squeezer is that the housing posts are loose, so that in case of a post being broken the entire housing or main casting need not be renewed. The posts are held securely by keys and bolts, so that when in place they are as firm as one solid casting. The bearings for the pinion shaft rest on the bed plate and are kept well out, so that the cinder in dropping will not cut the bearings. The scroll is heavily ribbed and 24 inches deep, the draft being very carefully and evenly laid out. This squeezer is capable of taking a 300-pound ball and reducing it to a 7-inch or 8-inch puddle bloom. Total weight complete is 60,000 pounds.



ROTARY SQUEEZER BUILT BY THE LLOYD BOOTH COMPANY.

Officials of the Colorado Coal and Iron Company say that the coal and coke business has been better in the last five months than it has been for years, and that the largest profits on coal and coke in the history of the company were made last December. The iron and steel plant is now working and rolling rails. Instead of having one 80-ton blast furnace the company now have one 120-ton furnace in operation, and the old 80-ton furnace is being enlarged to 120-ton furnace and will be in operation in a few weeks. The cost of their products has all been reduced largely, and they have business on hand the present year to insure a handsome return to stockholders.

**Testimonial to Colonel Scott.**—It will be remembered that at the recent annual convention of the National Iron Roofers' Association, held in Cleveland, Ohio, J. G. Battelle, of the Cincinnati Corrugating Company, of Piqua, Ohio, was appointed a committee to select a testimonial to be presented to Col. C. A. Scott, chairman of the Tariff Committee, to show the appreciation of the association of that gentleman's efforts in behalf of the general industry before Congress and elsewhere. The testimonial selected by Mr. Battelle was a diamond stud, which was presented only a short time since.

The *Times* reports the rumor that a former associate of the great engineer, Ericsson, has succeeded in introducing a process into the construction of heavy ordnance which eliminates to a great extent the defects so troublesome in high-powered guns. The exact nature of the process is not yet learned, but it is to be made public in the course of a few weeks. With experts working among our changes in rifling, in linings of bores, &c., radical departures are not to be wondered at any day. The latest hit appears to have been made in the compression of ordinary black powder radially, so as to insure in a Springfield rifle a muzzle velocity of 2190 feet per second, where heretofore only 1300 feet could be obtained.

## New York's Supremacy.

A bill now before the Legislature of this State creates a commission to inquire into the expediency of consolidating New York and Brooklyn and islands in the harbor under one municipality. It requires no prophet's ken to discern in coming time the rise of perhaps the first commercial city of the globe, as respects wealth, extent of traffic, variety and magnitude of industries and population.

Manhattan Island, in 1626, was bought from the savages by Governor Minuit, under instructions from the Dutch West India Company, for 60 guilders, or about $24 of our present currency. To-day the assessed valuation of New York is upward of $1,300,000,000. The original purchase was undoubtedly a bargain, and although "sharp practice" has not altogether ceased since the days of New Amsterdam, it must be conceded that "the Dutch are hard to beat." The growth of the city from its start has been phenomenal. But it is recorded that not until 1790, a twelvemonth after Washington's inauguration, was a piece of sidewalk laid in Broadway from Vesey to Murray street, much improvements not having been a necessity. Even at the beginning of the present century the population numbered only 60,000. Fifty years later, however, New York had 515,000 inhabitants, the period of rapid expansion having commenced. Meanwhile from various quarters new forces came into play, accelerating the process of development. Most notable of all was the impetus given by the opening of the Erie Canal—"De Witt Clinton's ditch"—in 1825. The introduction of Croton water in 1842 was another event of much local significance. At a cost of $12,000,000 an aqueduct had been built that outrivaled the famous Aqua Mastia of Rome, with its 38 miles of masonry and nearly 7000 arches. The underground logs of the Manhattan Water Company previously in use were incontinently abandoned, left to decay in the earth, and New Yorkers of to-day may inspect at their leisure the once famous reservoir of the antiquated Manhattan water system that remains intact at the corner of Reade and Center streets, preciously preserved as evidence that the banking company in Wall street are legally entitled to their charter. At the same time there comes from the stillness of its dark waters a voice that speaks eloquently of the mutations of a brief period in Metropolitan life. The great industrial exhibition of 1853, ending in the disastrous conflagration at the Crystal Palace, was one more in the sequence of events that served as a presage of greater things to be. Accordingly, the Empire City of 1890 can boast of, say, 1,600,000 inhabitants, without counting as many more in its near environs. The city limits, which less than 100 years ago extended two miles above the Battery, have been pushed northward 16 miles, with Yonkers on its furthest boundary.

Other facts are not less significant of growth from the embryo state. No longer ago than 1825 the post-office was located at the corner of William and Garden streets, the latter known at the present day as Exchange Place, the post-office proper occupying a room 12 x 15 feet, and the official in charge living overhead in the second story. The modern Gothamite looks with complacency on a post-office building that cost, say, $7,000,000, only lamenting that the accommodations are too restricted for the demands of business, and possibly a bit too far down town.

Searching in the retrospect for the secret of New York's ascendency, it is at once apparent that in a special sense she holds the coign of vantage in respect of the foreign trade. Lines of latitude and longitude, the trade winds, the drift of icebergs all point to New York as the natural trade center of the Western world. At this point is concentrated in vast volume the foreign commerce of the nation, and has been, ever since the Liverpool steamers Sirius and Great Western tied up to the pier on the East River, just above Wall street in 1838. We well remember the impressive spectacle those steamers made crowding in among the forest of masts of sailing vessels that fringed the city on every side. Ever since that date all European lines of steamships converge at the common center of trade and finance. As shown by the annual report of the Chamber of Commerce for 1889, more than one half of the entire commerce of the country passes through the port of New York. The following comparison is given:

| | Port of New York. | Total United States. |
|---|---|---|
| Total foreign commerce, 1888–89... | $876,818,110 | $1,613,187,633 |
| Total foreign commerce, 1887–88... | 852,165,691 | 1,525,663,790 |
| Increase at the port of New York..... | $24,642,419 | ..... |
| Increase at all ports of the United States. ..... | | $87,473,843 |

Here we see the fruition of the heroic endeavors of eminent American inventors, such as Robert Fulton, Chancellor Livingston, Oliver Evans and Stevens, pioneers in the art of steam navigation, and the scene of whose early exploits, by a singular ordering of events, was in the waters surrounding New York. The wonderful development of New York's wealth is shown by the fact that among its citizens are 125 men whose income exceeds $250,000 a year, and that there are 300 business houses rated by the commercial agences at $1,000,000 and over, not including Brooklyn, which has a goodly number.

Then as to architecture, New York has reason to boast. Some appraisements of the most conspicuous buildings are as follows:

| | |
|---|---|
| Tribune Association..... | $540,000 |
| Equitable ..... | 3,250,000 |
| Produce Exchange..... | 1,500,000 |
| O. B. Potter..... | 850,000 |
| Times..... | 550,000 |
| Bennet Building, Nassau street..... | 475,000 |
| Evening Post Building..... | 480,000 |
| Field Building..... | 950,000 |
| Trinity Building..... | 475,000 |
| Boreel Building..... | 925,000 |
| Mills Building..... | 1,600,000 |
| Mutual Life..... | 1,500,000 |
| Williamsburgh Fire Insurance Co... | 320,000 |
| United States Building..... | 995,650 |
| Welles Building..... | 700,000 |
| Bank of America..... | 875,000 |
| Gallatin National Bank..... | 650,000 |
| Merchants' Bank..... | 1,100,115 |
| Astor Building, 8, 10 and 12 Wall street..... | 800,000 |
| United States Trust Company..... | 725,000 |
| Drexel Building..... | 800,000 |
| Consolidated Exchange, ..... | 575,000 |
| New York Stock Exchange..... | 1,000,000 |

As intimated in the foregoing, the assessed valuation of New York City increased last year beyond precedent, equal to $68,000,000 over the year 1888 on realty alone. And who shall set bounds to her greatness if no foes present themselves at her gates and pestilence shall spare?

---

Shipbuilding at the various lake ports on the lakes is falling considerably below the high average maintained by them during the past three years. Two and one-half years ago 60 new modern type vessels, with a gross capacity of 108,525 tons, and valued at $8,325,000, were under contract at Detroit. At this time a year ago 59 boats, valued at $7,124,000, with a capacity of 100,950 gross tons, were contracted for. The new tonnage to be put afloat this spring will fall short of the two previous years by almost one-third. Of the 33 new boats 20 will be of iron, which shows conclusively that iron is entering into the construction of lake carriers to the exclusion of wood. The valuation of the boats now building is $5,800,000, with a carrying capacity of 78,950 gross tons.

## Southern Miscellany.

At Queen City, Texas, M. B. Vallin, of Kansas City, Mo., will build a 100-ton iron furnace.

A factory for the manufacture of sewing machines will be established at the new iron town of Glasgow, in which Gen. Fitzhugh Lee is interested.

The zinc works of the Washington Zinc Company, at Lynchburg, Va., have been completed and are now about to commence operations.

The Big Hill Mining and Investment Company have applied to the Kentucky Legislature for a charter.

Machine shops are to be located at Winchester, Ky., by the Kentucky Union Railway.

A number of capitalists have purchased the Hannum iron mines, at Erin, Tenn., and two furnaces are to be erected.

The new charcoal furnace to be built at Penfroe, Ala., will be built by D. W. Rogers & Co.

The Americus, Ga., Iron Foundry is building a new and large plant.

The Gill Iron Foundry and Agricultural Works, at Raleigh, N. C., are to be removed to Anniston, Ala.

Van Buren, Ark., is to have an iron foundry and machine shops.

Machine shops are to be added to the Howard Hydraulic Cement Company, of Cement, Ga.

The Laney-Jackson Lumber and Railroad Company contemplate developing iron mines at Laney, Ala.

Fourteen hundred acres of iron lands near Dalton, Ga., have been recently bought by F. W. Marsh & Sons, of Atlanta, and J. F. Allison, of Cartersville, Ga., who intend developing them.

The Fort Payne Coal and Iron Company, Fort Payne, Ala., intend opening new veins of ore on their property.

At Douglassville, Ga., J. R. Cole, J. S. James, C. C. Post and others have organized the Red Mountain Iron Company. This company own 5000 acres of iron ore lands and have a capital stock of $500,000.

Iron properties are being opened up near Owensboro, Ky., by the Falls of Rough and Green River Railroad Company.

A party from North Carolina is negotiating at Gainesville, Ga., with a view of operating machine shops and foundry.

The Washington, Ga., Foundry and Machine Shops have let a contract for new building.

A company is organizing to establish a foundry and machine shop at Yazoo City, Miss.

E. Skinner is preparing to open machine shops at Sumter, S. C.

The iron foundry of T. R. Evans, at Chattanooga, is being enlarged.

The Texas and Pacific Railroad Company have let a contract for machine shops to be built at Fort Worth, Texas.

A representative of a syndicate from Lawrence, Kan., is negotiating for the purchase of 10,000 acres of mineral properties in Tennessee, located on the Charleston, Cincinnati and Chicago Railroad. After sale is effected, furnaces are to be erected at an early date.

A company, with F. P. Gracy as president, has been organized at Charlesville, Tenn., to erect furnaces.

The Missouri, Kansas and Texas Railway Company intend building machine shops at Taylor, Texas.

The three new furnaces of the De Bardeleben Coal and Iron Company, at Bessemer, Ala., are ready to go into blast, but certain litigation in which the company are

A newly organized Knoxville company is to develop iron and coal properties near Elk Valley, Tenn.

The building for the Fort Payne, Ala., Rolling Mill is nearing completion. The Dustin-Hubbard Machine Works, at the same place, are making satisfactory progress in their new plant.

The United States Rolling Stock Company, at Anniston, Ala., are running on double time and have increased the number of operatives.

The Marble City Land and Furnace Company were organized at Sylacanga, Ala., a few days ago.

The Globe Iron Works, at Sheffield, Ala., have leased the Sheffield and Tuscumbia Dummy Line.

now engaged may postpone their starting up for some time. The combined daily output of this company's two other furnaces is about 250 tons.

The old Enterprise Machine Company, of Chattanooga, have changed hands and been incorporated by the following men into the Truxal-Dunnmeyer Mfg. Company: D. F. Nesbit, D. B. Henderson, J. B. Nicholson, Ben Truxal and Lew Dunn meyer. The capital stock of the new organization is $80,000.

The organization of the North Carolina Iron and Steel Company, at Greensboro, N. C., has induced the location in that place during the past 12 months of many new enterprises. The company will soon begin the erection of a Bessemer steel furnace of large capacity. Some of the capital in this enterprise has been furnished by citizens of Durham, N. C., which town has never recovered from its financial mishaps of a year ago. J. S. Carr, the president of the Durham Bull Smoking Tobacco Company, which is about to pass into the hands of an English syndicate for $2,500,000, is also vice-president of the steel company at Greensboro, and it is stated he will shortly withdraw his interest from Durham altogether and take up his residence in Greensboro.

The Philadelphia Furnace now being built at Florence, Ala., it is claimed, will be the largest and finest iron-producing plant in the South. Its daily output is to be upward of 200 tons. It is under contract to be completed by October next. J. P. Witherow, the furnace contractor, of Pittsburgh, has the work in charge.

Valk & Murdock, of Charleston, S. C., have finished two large oil tanks for Atlanta parties, and have booked orders for boiler-work.

James P. Witherow, of Pittsburgh, has a contract to erect a 60-ton charcoal-iron furnace at Rome, Ga., for the Rome Iron Company.

Mr. Lancaster, who built the furnace at Talladega, Ala., is now at Cave Spring, Ga., where he will erect a furnace. The ore found around Cave Spring is of a fine quality, and the writer recollects having heard the late distinguished Alabama iron man, Samuel Noble, of Anniston, pronounce it to be the best ore in that section. For several months past J. M. Cooper & Son have been shipping manganese from that point.

---

The Supreme Court of Rhode Island has given a decision which establishes a precedent as to the rights which an employer has to the knowledge of his employee. The Seheir Spring Dyeing and Bleaching Company, of which ex-Governor Henry Leppitt is one of the principal owners, had in their employ an expert chemist, James C. Woolworth, who contracted for a certain term of years and at a certain salary, with the provision that whatever discoveries he should make in the laboratory of the company in making dyes, &c., should be the property of the company. Woolworth later made important discoveries of much value in the company's business, but declined to make known his formulas. The company brought suit, and after a long consideration a majority of the full bench has decided that they are entitled to the full benefit of all the discoveries, and that Woolworth must impart his knowledge to his employers.

## Sensitive Drill.

The sharp competition existing between manufacturers in all lines of metal-work makes it necessary for them to employ only the most perfect tools and machinery in order to produce their goods to the best possible advantage. This demand for improved machinery has stimulated the inventive faculties of our mechanics and engineers, with the result that new machines are being produced, which, considered in relation to their special adaptation for the purposes for which they were designed, are almost absolutely perfect.

*New Sensitive Drill.*

The new sensitive drill here illustrated is made by the W. F. & John Barnes Company, of Rockford, Ill., and is especially adapted for use in the manufacture of electrical appliances, builders' and cabinet hardware, and in general where the drilling is not large, but where delicate adjustment and rapid and effective operation are essential. The machine is, in the strictest sense, a sensitive drill, for the variations of speed and power are completely under the control of the operator, who is always able to determine the pressure which is being applied. This feature prevents the breaking of twist drills and thereby does away with a great source of waste. All the adjustments of power and speed can be instantly made without shifting the belts or stopping the machine. The general form of the drill is clearly shown in the cut. By a hand screw within convenient reach the table can be moved rapidly on the column and can be clamped firmly at any desired hight. The machine will drill from 0 to 5-16 inch and to the center of a 10-inch circle. The greatest hight from base of the drill to the spindle is 46 inches, greatest hight from table to spindle 36 inches; diameter of column 3½ inches, and of spindle ¾ inch; vertical motion of spindle 3½ inches; speed from 0 to 1600 revolutions; weight 170 pounds.

## PROVIDENCE NOTES.

The jury in the case of Andrew S. Rounds, administrator of the estate of Charles Neumann, against the Herreshoff Mfg. Company, have awarded the plaintiff $4000 damages. Neumann was killed by a boiler explosion on the trial trip of the yacht Say When in December last. The executors asked for $20,000.

The Diamond Machine Company have recently abandoned their old office to add its space to the machine-room and have fitted up fine offices in another part of their extensive works.

A Rhode Island syndicate with a capital of $400,000, organized to control the manufacture and sale of ring travelers for cotton, woolen and silk mills, in spinning and weaving, has purchased the patents and business of the Harris & Burke Mfg. Company, of Salem, Mass., and will remove that branch of the latter company's business to this city. The Salem company were turning out 250,000 ring travelers per day and their capacity was 500,000. The company at Salem will continue the manufacture of belt hooks, turning out 200,000 per week.

The Lymanville Mill Company, North Providence, are having an additional large new condensing and non-condensing engine built alongside the old one. The two are to be run together.

It had been the intention of the late George H. Corliss, the founder of the Corliss Steam Engine Company, of this city, to erect for the Young Men's Christian Association of Newburyport, Mass., his native place, a suitable building for their use. Since his death his wife, son and daughter, to execute his desire, have completed plans for a building as a memorial to Mr. Corliss. The plans provide for a building of brick with rock face trimmings of freestone for a community of 15,000 inhabitants. It will be 2½ stories in hight and will cover an area of 6000 square feet. The cost will not exceed $50,000.

Representatives of nearly every firm of any note in Rhode Island engaged in the granite business met a few days ago at Westerly and formed an organization to be known as the Granite Manufacturer's Association of Rhode Island. The association will work in harmony with the Granite Manufacturer's Association of New England, lately organized in Boston.

Nails are in only fair demand for the season in the Providence market. The consumption of steel wire nails in house building has increased to a wonderful extent within a few years and wholesalers now buy them by the tons, where formerly they were bought in small lots. The more tenacious grip of the wire nail, as well as its greater tenacity of life, makes it far more desirable and safe, generally speaking, in wooden construction.

The proposals for furnishing 500,000 bricks for the East street sewer, Pawtucket, were opened by the Board of

Sewer Commissioners last Monday, and the following are the prices bid:

On Cars—$9, $9.20, $9.25, $9.40, $10.40.
On Wharf—$8.50, $8.75.
On Work—$10, $10.25.

The contract was awarded to Sylvester Dresser of Southbridge, Mass., his bid being the lowest on cars.

An electric lighting company has been organized at Phenix. The charter was purchased of the Russel Electric Light Company, of this city. The officers are: President, H. L. Greene; vice-president, James H. Campbell; secretary, C. F. Hill; treasurer, Robert Reoch; board of directors, Edward Pike, Stephen A. Douglas, F. W. Greene, Presbury Hoxie and Frank Tucker; auditors, George E. Sheldon and D. E. Dugan. The buildings will be located at a place near the S. Calvin Company's shop, but on a line with the New York and New England Railroad, the last named corporation having leased the site to the electric company at a nominal price. The buildings will be commenced at an early date. The capital stock is $20,000 in 400 shares at $50 per share. The new corporation will be known as the Peoples' Edison Electric and Illuminating Power Company.

ELECTRIC RAILWAYS.

A large party of Providence men went to Boston last Thursday to examine the workings of the electric street railway system of the West End Company. The party consisted of Jesse A. Metcalf, president of the Union Horse Railroad Company, and Messrs. Lucian Sharp, vice-president, C. A. Babcock, treasurer, Albert T. Potter, general manager, and Benjamin A. Jackson, director, of the Union road, Mayor Henry R. Barker, President Arthur H. Watson, of the Common Council; Aldermen William E. Clarke, E. G. Burrows and Arthur W. Dennis; Councilmen E. H. Rockwell, J. J. Gilmartin, C. E. Gorman, W. K. Reynolds and L. R. Peck; City Clerk Henry V. A. Joslin, City Engineer Samuel M. Gray; John E. Coleman, Commissioner of Public Works; M. J. Perry, vice-president of the Narragansett Electric Lighting Association and president of the National Electric Lighting Association; G. C. Sims, of the Armington & Sims Engine Company, and R. W. Comstock, of the Rhode Island Horseshoe Company. On arrival at Park Square the party entered a special electric car and were taken out over the Brighton division to the Allison carhouse, where an inspection of the machinery was made. The generators are driven by Armington & Sims engines, developing 1000 horse-power, and the current is conveyed to the cars by a conductor strung over the middle of the track. Each car carries two 15 horse-power motors, with necessary gearing to the driving axles. The West End Company have 127 electric cars in active service on their several divisions. On the return to the city the car was driven up Tremont street to Scollay square, returning afterward to the Thorndike, where dinner was served and speeches made. The visitors were favorably impressed with the operation of this system, which will probably be adopted by the Union Railroad Company in this city.

The long time it takes the driver of a horse car to wind up his brake is a serious disadvantage when it is necessary to make a quick stop to avert an accident, and now that electric cars are superseding the horse cars the inconvenience of the old, familiar method of applying the brake is increasingly manifest. Air brakes are supplying a remedy on steam trains, and they are suggested for electric cars, but they have their disadvantages, beside, being expensive. It is understood that the West End Street Railway Company and the Thomson-Houston Company are considering the advisability of putting a new brake on electric cars, and that an experimental test is soon to be made by equipping one car with the new device. It is patented under the name of Drake's instantaneous brake. Instead of the brake shaft, surmounted by a crank, turned by the driver's right hand, the device is worked by the driver's foot pressing upon an iron pin projecting just above the floor of the platform. This pressure moves a toggle joint, which in turn applies a friction clutch upon one axle and also presses the brake shoes upon the wheels of the car. The application of the brake is almost instantaneous, and the faster the car is moving the quicker is the brake applied. The result of the practical testing of this device will be watched with interest, for any appliance that will add to the safety of operating the electric cars will be a boon to the public.

A MAMMOTH LOCOMOTIVE.

Consolidation expresses the class to which the big new locomotive which has been hauling freight trains on main line of the New York, Providence and Boston Railroad for a week past belongs. The engine was built by the Rhode Island Locomotive Works for the Denver, Texas and Fort Worth Railroad, and is designed to handle the heaviest freight trains. After it is tested to the satisfaction of the New York, Providence and Boston Road it will be disconnected and shipped to Chicago, where it will be again connected up and tested on the Chicago, Milwaukee and St. Paul Road, between Chicago and St. Paul, in connection with their large 10-wheel engines, a number of which were built at the Rhode Island Locomotive Works. After that it will be placed on the Minneapolis, St. Paul and Sault Ste. Marie Railway, and there tested against some very large engines, and after these tests it will be put in the Chicago, St. Paul and Kansas City to run in opposition to some of the large mogul locomotives between St. Paul and Chicago. After these tests are over the machine will be disconnected and freighted to its destination. The engine is a very powerful machine, and good accounts are expected of it in its very extensive and doubtless very thorough tests. The engine has cylinders 20 inches in diameter and 24-inch stroke, drivers 50 inches in diameter, driving-wheel base of 15 feet; total wheel base of engine 22 feet 6 inches; wheel base of engine and tender 49 feet 9½ inches. The total weight of the engine in working order is about 122,000 pounds; weight on drivers about 109,500 pounds; on pony truck about 12,500. The weight of tender is about 75,000, and its tank capacity is 4200 gallons. The boiler is of homogeneous steel 9-16 inch thick, riveted with 15-16 inch rivets and is calked within and without. The waist is 62 inches in diameter at smoke-box end, made wagon top, with extension arch. The 246 tubes are of charcoal iron, 2 inches outside diameter and 13 feet 8 inches long. The fire-box is Otis steel 108⅛ inches x 33¾ inches. The crown is supported by radial stays 1 inch in diameter. Cast iron rocking and dumping grates suitable to bituminous coal are used. The Rhode Island Locomotive Works balanced valve is used in the steam chest, piston heads have cast iron spring ring packing, piston rods are of twisted iron and the Laird guide and crosshead are used. Driver ties are of standard steel 3 inches thick; the first and fourth pairs are flanged, and second and third pairs are 6½ inches wide. Driving axle journals are 7½ x 8 inches. The rods are of hammered iron, the parallel rods being put up with solid ends. Sellers' injectors, placed right and left, feed the boiler. Two-wheeled truck under the front end swings from a radius bar. The wheels are Paige, steel tired and 30 inches diameter. The engine is fitted with Westinghouse brake for tender and train.

SUCCESSFUL TRIAL OF THE CUSHING.

The second trial trip of the United States torpedo-boat Cushing took place from the Herreshoff Works last Thursday. She steamed out from the wharf at 7.20 a.m. and went over the Mount Hope Bay course on a direct line for Newport. The little gray-backed vessel behaved admirably. The test was made in smooth water, as the specifications require, and the naval board had the boat put through every possible evolution she would be required to make in an engagement.

She was tried first with one engine, then with both, and then with each alternately, a device which caused her to spin around swiftly in the water, making with an axis amidships 22 revolutions in 17 minutes. She was stopped suddenly, turned backed at will, run ahead by jerks and maneuvered with her helm at different angles, during all of which tests her action was easy and satisfactory.

When the speed trials were attempted the boat glided along with a steam pressure of 225 pounds, doing a fraction over 22 knots an hour, and for every quarter-knot over the Herreshoffs are to receive $1600. The boat was backed for two minutes and attained a speed of 13½ knots. The weight of her armament was 17 tons From tests made by the builders before the Cushing was turned over to the Government it is believed that she will show 24½ knots, and this under a pressure of 250 pounds, the limit allowed. On the speed tests the screw was found to make 1001 revolutions to the knot, and the counters indicating this worked amoothly for an hour, when a small screw in the starboard counter broke and let down one of the arms to the condenser. As there was no means of remedying the break at hand it was found necessary to put into shore, and after repairs were made the water became far too choppy to warrant a further trial. It is stated that the first mile of the speeding was covered in 3 minutes 1⅘ seconds, the third in 2 minutes 54⅕ seconds and the fifth in 2 minutes 47⅘ seconds. At a higher pressure a four-mile run was dashed over in 10 minutes 7⅕ seconds. LEONIDAS.

---

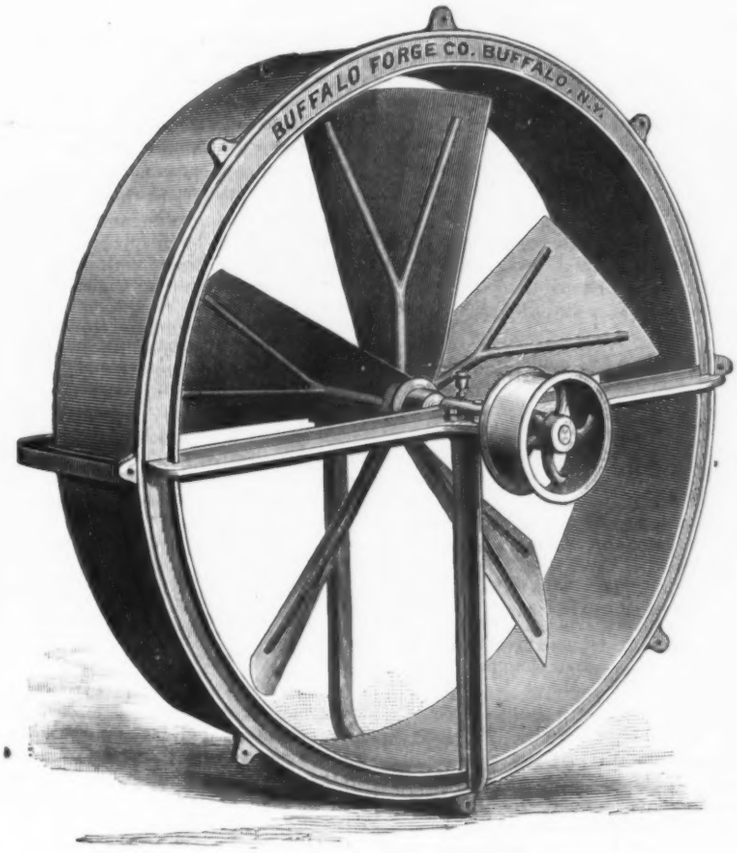
Prof. Elihu Thomson, of the Thomson-Houston Company, addressed the Boston Electric Club last week. He said: "The subject of the transmission of electrical energy is one that is engaging the attention of electricians all over the world. The problem was not so much as to the development of power as it is to carry power." He traced the gradual development of electrical machinery and the special forms for applying the current, and predicted that the future would bring marvelous developments in the matter of electric traction. He did not disparage of seeing all the steam railroads run by the subtle current. Another question of the future, he said, is the development of electric energy by water power, and, by a network of wires, distribute it economically for domestic and commercial purposes. Regarding the street car motor he said that this application of electricity had passed its tentative period and had become a fixed fact. The risk from fire, he said, was very great where a large number of stations were distributed about a city of any importance. He said the dynamo of the future would develop from 2000 to 3000 horse-power, and he saw no reason why it should not go far beyond those figures, as there was practically no limit to he increase.

---

The employees of the Norrie (Wis.) Iron Mine, the heaviest producer in the world, have struck for higher wages. The strike threatens to be a long one.

## Ventilation by Disk Wheels.

The subject of the proper ventilation of workshops and other buildings, though it has attracted considerable and a constantly increasing interest almost ever since architecture advanced to the position of a recognized art, is still sadly neglected in some quarters, many people having a very inadequate idea of the importance of an abundant supply of pure fresh air, and its effect upon the health and the efficiency of those breathing it. While many thousands of dollars have been expended and numerous devices put to test in the endeavor to secure a perfect system of ventilation, attention, until more recently, has not been directed to securing a perfect freedom from foul air in the many factories and manufacturing establishments giving employment to a large per cent. of our city population, the work often being such as poisons the air in an alarming degree, telling sooner or later on the health of those who are compelled to breathe it. In these ventilating experiments which have been made, more especially in the interest of securing a perfect system for large buildings, such as theatres, churches, &c., it has been clearly demonstrated that all methods that depend in a greater or less degree upon natural draught for movement of air, are more or less affected by atmospheric changes, and in consequence a certain amount of air as being regularly supplied in a given time without reference to outside conditions of the weather, cannot be relied upon, ofttimes such systems being rendered practically dormant by some of those conditions. The general conclusion is that satisfactory and regular ventilation at all times can be secured only by a mechanical movement of the air, by which a given quantity of it is exhausted and replaced in a given time, regardless of atmospheric conditions.




VENTILATING DISK WHEEL.

The disk wheel has proven to be one of the most efficient means of accomplishing this end, and our illustrations show such a wheel with methods of application, as made by the Buffalo Forge Company, Buffalo, N. Y. This wheel has been recently improved by the builders, and among their claims for it are ample capacities to handle large volumes of air at small expense of power; perfectly noiseless operation, adapting them to use in a large number of places where noise could not be tolerated, while they are of handy form and light, and are fitted with a self-oiling device, which permits the wheel to be left without attention for long periods of time, which is an especially valuable feature when used in cupolas and other places not easy of access. A disk wheel is very convenient for use in connection with pipe connection for direct work in removing smoke and gases from forge fires, steam from boiling kettles in steam confectioneries, and the unpleasant odors arising therefrom in dye houses and in other similar locations.

In the application of an exhaust disk wheel where piping is necessary, the wheel is always placed as near the work to be accomplished as possible, with large branch pipes and main-pipe of full diameter of wheel. The branch pipes are made with telescopic joints on the different kettles, &c., to admit of raising up out of the way when filling or removing material from kettles. Smoke, gases or steam can always be more easily and effectively removed by being taken immediately into pipes at the points where they are generated and conveyed to exhaust-wheel, than if permitted to expand into an open space or room and thence carried off. The general sizes range from 18 inches to 84 inches in diameter, though it is possible to make larger for special requirements, and some-

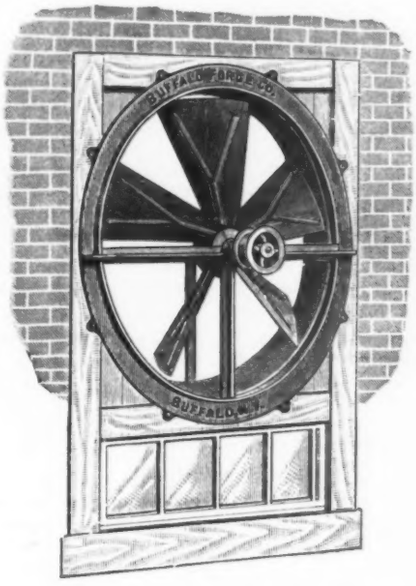



*Fig. 2.—Disk Wheel Applied to Window.*

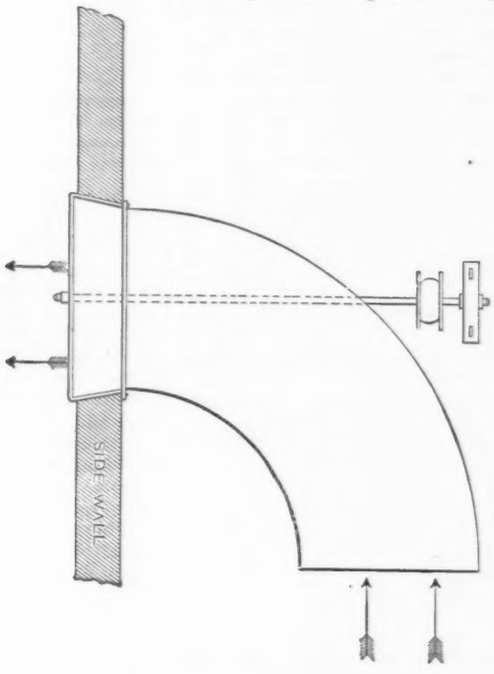



*Fig. 3.—Section Showing Arrangement in Wall or Window.*

thing of an idea of the amount of air which may be removed by the different sizes at a given velocity may be obtained by noting that a 24-inch wheel at 300 revolutions per minute exhausts 1864 cubic feet. Fig. 2 of the illustration shows its application to a window, and Fig. 3 is a sectional view of the arrangement where it is placed in a window or wall discharging outward.

## THE WEEK.

Arizona desires to acquire from Mexico territory on the southern boundary sufficient to give her a deep-water port upon the Gulf of California, but documents which recently passed between representatives of the two governments show that under the Mexican constitution no such proposition could be entertained, and that even a suggestion with the object proposed is precluded by "obligations of traditional good faith" on the part of the United States.

The Japanese will have a national industrial exposition at Tokio from April 1 to July 31, 1890, inclusive. Its purpose is to exhibit home products exclusively and thereby show the progress made in Japanese art, science, agriculture and industries.

The Standard Oil Company are having a hard fight with independents for the control of the Ohio oil territory.

A proposition to exclude American engineers from service on Canadian waters is pending in the Dominion Parliament.

The very latest is a big cracker combination, controlling the business in New York and New Jersey, to be known as the New York Biscuit Company; capital, $5,000,000. Many of the stockholders are identified with the Diamond Match Company.

The final test of three dynamite guns on the cruiser Vesuvius, 13th inst., is said to have been satisfactory in all respects. The firing was done over a measured mile, and the projectiles are said to have gone in some instances a third of a mile beyond the required distance. This was accomplished with a pressure of 700 pounds.

It now seems probable that the scare about ice supplies will result in unusual abundance, about every mill pond in the country having contributed to the general stock.

Two more powerful gas wells recently struck in Pennsylvania, one of them an 800 pounder, fail to indicate an exhaustion of supplies.

The Polson Shipbuilding Works, at Owen Sound, in Canada, recently built a large steamship, the Manitoba, for the Canadian Pacific Railway lake service, and recently Sir Donald Smith said the company had found her quality equal, and in some respects superior, to the sister ships which were built on the Clyde. Many of her parts were far superior to the British make and were a credit to Canadian workmanship.

Building operations in Detroit last year were larger than in any former year, representing an investment of $5,364,000.

The tide of travel from New York to European ports has commenced and promises to exceed that of last year.

Respecting steamship communication with South America, a report furnished to the Pan-American Congress by the Post Office, shows that there are running 5 lines to Mexico, 7 to Central America, 3 to Columbia, 2 to Venezuela, 2 to Hayti and 4 to Brazil, or 23 lines in all. These are only the lines having transactions with the Government. In addition there are a considerable number of lines, excluding tramps, which have no dealings with the Post Office, and therefore do not appear in its list. The point is made in some quarters that there are in the South American trade as many steamships as can obtain profitable employment; therefore extraneous aid is not necessary.

Commissioners duly appointed have decided that Atlantic avenue, in Brooklyn, shall have a two-track depressed railway from the South Ferry to the city line, at a cost of $1,700,000 per mile, or $12,000,000 for the entire length of road proposed. Engineer Probasco was ordered to prepare plans and specifications.

Herr Krupp, proprietor of the extensive cannon foundry at Essen, has given $500,000 for the erection of homes for workingmen and a training school for women.

The entire exhibit made by Edison at the Paris Exposition will be displayed at the Lenox Museum in this city, together with novelties of various descriptions illustrative of "the wonders of electricity," the exhibition to open April 7 and continue six weeks.

A new assessment of real and personal property in St. Louis foots up $245,088,720, an increase over that of two years ago of $52,084,720. This adds $1,300,000 to the city and State taxes.

Canadian high officials state that the traffic of the Canadian Pacific Railway across the State of Maine is increasing rapidly, and that no trouble has arisen from the question of bonding privileges.

A dispatch from Durango, Mexico, says a number of Maine capitalists have purchased a tract of 500,000 acres of timber land, and will erect immense saw mills to supply the United States, investing over $1,500,000, exclusive of the cost of land.

Ninety miles in 85 minutes is said to be the fastest run ever made between Philadelphia and Jersey City. This exploit was performed on the 10th inst.

Less than one-half of the seamen in the American navy were born in this country. A reconstruction requires something more than new ships.

The scarcity of machinists in Pittsburgh makes it necessary to work the men on double time.

A plan for bridging the St. Lawrence River from a point near the village of Waddington, in St. Lawrence County, to the Canadian shore opposite, has been introduced at Albany for the sanction of the Legislature. The general idea of the scheme is to bring the Canadian Pacific road into the States by connecting with the Rome, Watertown and Ogdensburg, and into New York City by connecting with the Delaware, Lackawanna and Western, thus forming a new transcontinental line from New York City to the Pacific Coast. The proposed capital is $500,000.

The Lake Superior lumber shipments this year will be heavy, the log cut having been enormous.

The National Government is pushing its work on the railway across the Isthmus of Tehuantepec, which it took over from a bankrupt American company several years ago. On the Pacific Coast the Mexican National Construction Company, a separate concern from the present railway company, took over the concession for a line from Manzanillo into the interior as a portion of its assets on the reorganization of Mexican national affairs. It already has a narrow-gauge line in operation from Manzanillo, the chief Mexican city on the Pacific Coast, up to Colima, and it proposes to build a standard gauge line from Colima to Gaudalajara. This line operated in connection with the Central's Guadalajara division, or sold to the latter company, would give a very important transcontinental route from Tampico to Manzanillo. Mexico will thus have four interoceanic railway lines within a few years.

The Philadelphia and Reading's report shows that the Coal and Iron Company's surplus assets were reduced last year $950,000, as against a surplus of more than double that amount in 1888, largely due to depression in the coal trade.

T. C. Martin, in a lecture designed to show the superiority of the electric motor, argues that horse, cable and steam power are destined to be displaced entirely in urban travel. Steam motors are out of favor in cities because of their noise, smell, smoke, dust, steam escape, oil drippings and the like nuisances. Horse-power is objectionable because of its dirt, slowness and expensiveness, and the cable, though destined still to do a great deal of important work, is very expensive and for many streets impracticable. If the truth of these assertions be doubted, the fact remains that the utilization of electric power as a motor has been developed with remarkable rapidity.

The New York Board of Trade and Transportation asks Mayor Grant, in behalf of the Long Island Railroad Company, for a permit to construct a tunnel under the East River. New York pilots also favor the tunnel.

Secretary Windom adheres to his decision to locate the immigrant depot on Liberty Island, at the same time placing the institution wholly under Federal jurisdiction. The buildings which the Treasury Department proposes to erect will be located on the west side, and will not interfere with a view of the statue. It is proposed to surround that portion of the island used for the depot with a fence and to confine the business of the landing of immigrants entirely to that inclosure. The Treasury Department already has a foothold on the island, where is established the Lighthouse Board.

The shipbuilding returns of France show that the bounty system has by no means killed off foreign competition in building French-owned vessels, as, while 59 steamers of 32,559 tons were built last year in French yards for French owners, 34 steamers of 17,600 tons were built for French owners in foreign yards. Of sailing vessels above 200 tons the proportion built abroad is still greater.

The Cape Cod Ship Canal enterprise is affected by Simmons' Sixth National Bank troubles.

The Detroit River Tunnel Company will ask authority from Congress to construct a tunnel at that city, by boring beneath the bed of the river by hydraulic pressure. Luther Beecher, whose system it is proposed to adopt, has taken out patents for his invention.

Kansas complains that the imports of lead ore from Mexico to be smelted have declined one half and that her exports of corn to that country have been checked by retaliatory legislation

The city of Laredo, Texas, aspires to be known as the Gateway of Mexico. A local correspondent makes an array of statistics showing a rapid increase of exports from the Mexican republic during several years past, affording evidence of the stimulating effect of railroad construction. The writer says: "The publication by the Mexican Government of the official statistics of the national exportation for the fiscal year 1888–89, ending June 30, affords an opportunity of comparing the returns with those for the pre-

ceding fiscal year, when the value of exportation amounted to $48,885,908, showing an increase for the twelve months of $11,272,514." Of this increase the growing proportion of merchandise exported via the United States is the most gratifying feature—Laredo, Eagle Pass and El Paso taking a goodly share. In consideration of these facts, also bearing in mind that the products of Mexico and of the United States are in no sense competitive, the Laredo correspondent contends that a reciprocal arrangement for the interchange of merchandise would prove of inestimable benefit to both countries. This conclusion cannot reasonably be doubted.

A formidable strike of stevedores in Liverpool paralyzes the Atlantic trade, insomuch that several steamships of the regular lines have been withdrawn.

A cork tree originally sent from the Agricultural Department in Washington has been successfully grown in Florida, and it is believed that the tree would flourish if generally introduced.

The rudder of the British warship Vulcan when complete will weigh 22 tons, being the largest and heaviest ever fitted to a ship of the royal navy.

The Austrian Government is building a "torpedo hunter" in which the hull will be protected by cellulose armor. It will cost $500,000 and is expected to be the swiftest craft of its kind afloat.

The Jersey City horse cars to Bergen will be run by electricity.

Nearly 200 designs have been submitted by competitors for the tall tower in London. Few of them provide for a structure more than 1200 feet high.

About 150 representatives of railroad corporations in the United States are spending a month in Mexico and will convene at the capital this week, together with the Governors of several States and other prominent citizens, to confer with reference to the development of international railroad interests.

The frontier city of Laredo, in Texas, proposes an international exposition where may be kept on exhibition all those wares manufactured in the United States which are adapted to the Mexican market, and all the products of Mexico which can be utilized in the American market.

Engineer Hearding, of Milwaukee, says Chicago's proposed big draw would lower the water in Lake Michigan 22 inches and prove highly detrimental to navigation.

The commencement of work on the contemplated East River Tunnel at Forty-Second street is delayed by failure to obtain permission from the Board of Aldermen.

The foreign trade of New Orleans of late, both as respects exports and imports, is so large as to excite surprise. Within a single week 20 large steamers cleared, taking out over 1,000,000 bushels of corn and 52,000 bales of cotton.

Relations between the White Star Line of steamships and the Reading Railroad Company are said to be very close, and Philadelphia papers are sanguine in the belief that the recent extensive purchase of wharf and warehouse property in that city is an indication that still closer traffic relations are in prospect. Another line of steamships from Philadelphia is thought to be not improbable.

A charter has been obtained in Montreal for a permanent industrial exhibition, in which the products of the foundry and machine shop will be conspicuous objects, as well as those of the mine, the forests, the sea, air and field. Extensive grounds have been secured.

# MANUFACTURING.

### Iron and Steel.

The employees of the Homestead Steel Works, of Carnegie, Phipps & Co., Limited, at Homestead, Pa., will receive an advance in wages, to take effect in April next. It will be remembered that a sliding scale based on the selling price of billets in the open market is in operation at these works. Wages from January 1, 1890, to April 1, 1890, have been paid on a basis of $30.75 for billets, which was accepted as the average price from October 1, 1889, to January 1, 1890. It is thought wages for the three months commencing in April next will be paid on a basis of about $33.50 for billets. This would be an advance of about 10 per cent. on present wages.

The Edgar Thomson Steel Works, of Carnegie Brothers & Co., Limited, at Braddock, Pa., have broken all previous records. From 6 o'clock in the morning until 6 o'clock in the evening on Friday last there were turned out 2597 rails. The No. 2 turn, working eight hours, from 2 to 10 o'clock on the same day, made 1730 rails, and No. 3 turn, from 3 to 6 o'clock Saturday morning, made 1746 rails, or 6073 in the entire 24 hours.

The Allegheny Bessemer Steel Company, of Pittsburgh, whose plant is located at Duquesne, Pa., report that they have enough orders on hand for rails to keep their works fully employed up to July next.

The National Forge and Iron Company, whose works are at East Chicago, Ind., are now running their mill and forge to full capacity, the total consumption of scrap material being 125 tons daily. The net product of finished bar iron is over 100 tons. The forge turns out about 100 axles per day, besides some forgings. The plant is located at East Chicago, Ind., 20 miles from Chicago, on the banks of the Calumet River, and but a very short distance from Lake Michigan. Three tracks enter the works, connecting with nearly all the railroads centering in Chicago and giving the concern an opportunity for prompt delivery of finished material. The works have been running for seven months without a single break. The fuel is oil supplied by the Standard Oil Company. The works now employ 425 men, but they intend soon to build an additional 8-inch guide mill and two more steam hammers, which will increase the force to 600 men.

The Baird Furnace Company's furnace, at Gore, Hocking County, is having some slight repairs made to it, and next month the company will begin receiving native ore and put the furnace in blast between the middle of May and the first of June.

The damage to the Heller & Brother Steel Works, in the Woodside section of Newark, N. J., by a fire last week is $12,000. Doop & Lyons, tool manufacturers, whose shop was also destroyed, lost about $5000.

The firm of Cofrode & Saylor, builders of iron bridges and contractors for the construction of piers, warehouses and other large buildings, whose extensive works are at Pottstown, Pa., have been chartered as a stock company, under the name of Cofrode & Saylor. The new company were organized by the election of Francis H. Saylor, president; Joseph H. Cofrode, vice-president; J. E. Challenger, secretary and treasurer; George M. Evans, auditor, and F. H. Saylor, J. H. Cofrode and P. R. Foley, directors. The capital stock is $500,000. The entire business of the firm has been transferred to the company, but the Reading Rolling Mill Company, whose works are at Reading, though the stock is owned by the same parties, is a separate corporation. Cofrode & Saylor, incorporated, employ about 600 workmen at Pottstown, and at the present time 400 men are engaged in its outside operations. The late firm of Cofrode & Saylor, since establishing works at Pottstown, 12 years ago, has been very successful.

The Cambridge Iron and Steel Company, of Cambridge, Ohio, deny emphatically the reports that the company are connected with other concerns in a similar line of business, and that they were organized by the Cambridge Roofing Company.

### Machinery.

Seaman, Sleeth & Black, proprietors of the Phœnix Roll Works, of Pittsburgh, are engaged in making two sets of rolls which in point of size are not excelled in the world and probably not equalled. One pair is 25 feet by 14 inches on the face, and, with the couplings, 28 feet long. They have been ordered by a local firm. The other pair is 36 x 152 inches on the face, with a total length of 18 feet. When cast each roll weighed 32 tons and will finish up at about 28 or 29 tons. These last mentioned are for a firm in the East who manufacture linoleum, and will enable them to turn out sheets of that material 12½ feet wide, whereas the widest heretofore made has been 8 feet. Through the center of each roll a 5-inch hole will be bored to admit steam, which will pass through and keep the rolls warm during the process of rolling the linoleum.

The Schoen Mfg. Company, of Philadelphia, are removing their works to Allegheny City, Pa. They are erecting a building 180 feet in length by 90 feet in width, with adjoining boiler and supply sheds. The company manufacture pressed steel center plates, stoke pockets and other articles used in car-building, to take the place of cast-iron articles.

For the manufacture exclusively of steel boilers, a company have been formed, consisting of F. F. Cleveland and Wm. Hardwick, of the firm of Cleveland & Hardwick, and L. G. Skinner and Frank Connell, of the Skinner Engine Company, together with H. R. Barnhurst, late of the Stearns Mfg. Company, all of Erie. The brick building, 60 x 150 feet, is now under way and will be fully completed in about two weeks. All the machinery has been ordered of the most modern type, and will be in place, ready for business, within 60 days.

William Glover & Co., of New Castle, have bought two acres of ground in that town and will at once begin the erection of a large foundry and machine shop. Wm. Glover is at present foreman of the foundry department of James P. Witherow's works, in New Castle.

The Samuel J. Creswell Iron Works, of Philadelphia, have been incorporated at Harrisburg; capital, $100,000.

### Miscellaneous.

Fuller & Warren Company, Troy, N. Y., proprietors of Clinton Foundry, one of the largest stove manufacturing establishments, are contemplating moving their establishment to Joliet, Ill. It is stated that the entire business will not be removed at once, but as new buildings are erected at Joliet and facilities are increased there the operations of the concern will be diminished in Troy.

Bridgeport Crucible Company, Bridgeport, Conn., have just put in a steam drying closet fitted for drying 25 tons of German Crown clay, which will be used in connection with another having a capacity of 10 tons. They have also recently added a new power jigger, making four now in operation. Notwithstanding this increase of facilities, they report that they are compelled to run overtime to keep up with orders.

# The Iron Age

New York, Thursday, March 20, 1890.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, JR., - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS - - HARDWARE EDITOR.
JOHN S. KING, - - - - BUSINESS MANAGER.


## Iron-Making and Real Estate.

Probably no reproach is more frequently leveled among ironmakers who have been in the business all their lives against their Southern competitors than that reflecting upon the close connection of real estate speculation with the building of new plants. Furnaces and mills built to "sell corner lots" are often contemptuously referred to. The line between what is legitimate and safe speculation and what is dangerous gambling is very difficult to draw. If the creation of a new industry converts a tract of farm land into a village, the real estate in which is worth ten times its value, as residence and business property, those who originated the enterprise are entitled to the "unearned increment." Manufacturers in the East and West have generally taken broad ground on this question. They have argued that where a community is dependent upon a local industry it is not a wise policy to tax that community by high rents, which are the inevitable result of high real estate values. The rents must come ultimately out of the wages fund of their own employees, and sooner or later the manufacturers must pay in the shape of higher wages for the drain upon the purses of those who live directly or indirectly upon the wages they themselves pay out. If the wages are fixed by a powerful union a manufacturer will be forced to suffer an equivalent for higher cost of living in the form of his inability to retain the better class of men.

There seems to exist in many parts of the country an absurdly exaggerated idea of the number of men employed in iron works. Let us take, for instance, a modern furnace, producing from moderately rich ores 35,000 to 40,000 tons of pig iron per annum. Such a plant would employ about 100 men. Taking it liberally, this would, with the shopkeepers, mechanics and their families, represent a population of about 500 persons, who would certainly not require more than 100 houses and probably considerably less. An average rental value of $100 a year would be high, representing a cost, inclusive of ground, of say $1000 each, or $100,000 as a maximum. In some sections of the country, proximity of deposits of raw material, with the employment of additional hands, may double that amount.

Dozens of small towns in different parts of the country could be named which depend exclusively upon local iron manufacturing, often diversified by the existence in them of rolling mills, foundries and allied plants. Yet in none of them do real-estate values even approach the figures which are common enough in any of the blossoming towns of the South. They would quickly frighten any manufacturer or promoter contemplating building in such a locality. In our larger manufacturing centers high land values for plant and for dwellings for employees have driven capitalists into suburbs. New York, Pittsburgh, Chicago, and to some extent even Birmingham, Ala., have developed this tendency. Any one familiar with iron-making, and with the population which the industry supports both as to numbers and quality, understands that its establishment does not warrant auction sales of real estate at which hundreds of thousands of dollars change hands, in cash or in notes. Somebody is sure to be hurt. Sometimes the cost of developing enthusiasm which promoters must bear is more than the results in cash or doubtful securities represent. Sometimes land speculators are the sufferers, having failed to find somebody else whose faith was greater or whose judgment was worse than their own. Some have already gone through the sad experience that one furnace or a rolling mill does not by some mysterious process convert farm lands at $100 an acre into town lots worth 50 times that amount per acre.

Quiet reasoning will do no good with those who hope to profit by speculation. But it seems to us that men who are approached by local speculators with inducements to put up plants should carefully consider how participation in these schemes will affect their interest. The speculators and boomers look only to immediate gain, and will quickly desert an enterprise which ceases to be productive. A manufacturer is bound to the locality he has chosen. Directly and indirectly he must suffer when the corner-lot boom has subsided and development begins on merit, and not promises or speculations. An enterprise of any magnitude, conceived in earnest and entered into as a business investment, can gain very little, and lose much, by being the tail of a land speculator's kite. However seductive the inducements to enter the ground floor may be, the subcellar will be found well peopled by more favored persons.

## The Labor Movement Abroad.

Between the erratic operations of speculators in warrants and the eagerness of labor to secure a lion's share of the apparent profits in manufacturing, the foreign coal and iron trades are in a very difficult position. The situation is aggravated by political intrigues and wire pulling. With the idea of cutting the ground from under socialist agitators, the youthful German Emperor has been pandering to the workmen, and has given them encouragement without attaining his object. Imbued with the notion of a personal responsibility and ownership, the executive has interfered in the most wanton manner in industrial and business affairs. The Government has assumed judicial authority the emperor himself undertaking to be the final arbiter. To cap the climax, an international conference has been called, the proceedings of which are ridiculously carried on in secret.

Whatever conclusions may be reached, the whole course of events, notably in Germany, is calculated to warp the ideas of workmen and create a source of endless trouble. They are already forgetting that their relations with their employers are based on simple business principles. If the views they now hold are to prevail, industrial undertakings are carried on to secure to them a living so long as the markets are in a normal condition, that their employers must stand the losses when competition is severe, but that the workmen are entitled to large returns when business is booming.

In England the miners are striking in all the leading districts for advances based upon the nominal sales prices reached during the recent excitement. The whole industrial work of the country is threatened with paralyzation. If the men or the coal operators hold out for any length of time the entire iron and steel trade of Great Britain must be seriously crippled. Under the circumstances prices must develop an advancing tendency, and the dangers remotely threatening our trade through the possibility of a serious decline abroad will be averted for some time to come.

## Late Events in Cuba.

Since Cuba has become a province of Spain and has her own representatives in the Spanish Cortes at Madrid, a captain-general has no more the absolute sway over the lives and property of the inhabitants of the island he possessed in the olden colonial times. Besides, the cable keeps him under easy and uninterrupted control of the supreme Government. Nevertheless a great deal of responsibility rests upon his shoulders, and his initiative, clear-sightedness, experience and management are pretty much as important as they were when exercised by Concha and Martinez Campos. His task is a most difficult and delicate one, divided, as the white population is, into two camps, politically and socially, the native Spaniards or conservative party, and the Cuban creoles or liberals.

On February 7 Captain-General Don Manuel Salamanca y Negrete suddenly died at Havana, of a bilious fever; and he is succeeded by Don José Chinchilla, late Minister of War. General Salamanca was in Cuban political matters a free and easy-going man, allowing the creoles to take as much as they liked, nor did he trouble himself about their newspaper articles. This explains the popularity he enjoyed among them, and the suspicion with which the Spaniards viewed his "*laissez-faire*" policy. But in all that pertained to his official duties there could not be found a more efficient governor. With an iron hand he stifled brigandage and kidnapping; he undertook to place the entire island in the most perfect state of fortification, using for this purpose all the latest and most approved methods. His plan included new

railways, the canalization of two rivers and a central military highway, as well as the most effective ordnance. During the second year of his command the custom houses yielded $13,563,468, as compared with $10,673,134 the year preceding his rule, when under Gen. Sabas Marin, the supervision was less strict. Yet in spite of increased vigilance a defalcation of $700,000 was detected in January last, showing how difficult a task it is to keep the revenue department straight.

General Chinchilla is a nephew of the late Marshal Serrano, Duque de la Torre, and is 51 years old. He has been a soldier all his life. He first achieved military prominence in the revolution of 1868, when Queen Isabella was deposed. He was then Lieutenant-Colonel of a regiment and took an active part against the Queen. He commanded a division during the Carlist insurrection with great credit. Latterly he has been Minister of War with the rank of Lieutenant-General. The general belief seems to be that he will try to promote the prosperity of Cuba, and that his administration will be just and conservative.

Cuba stands, indeed, in need of a good administration like that of General Salamanca, especially in financial matters. The Spanish Minister of Finance proposes to convert the debts of Cuba of the years 1882 to 1886, as well as the floating debt, into consolidated bonds bearing a lower interest. He also announces his intention of calling in the Havana bank notes at the rate of 50 cents gold to the dollar, and discharging the deferred pay of the retired troops of Cuba at 58 per cent. in gold, and to raise the customs' duties 20 per cent.

The efforts of the Spanish authorities to divert the stream of immigration from Spain from the Argentine Republic to Cuba resulted so far in the arrival of a few colonists from Malaga and Granada and the province of Galicia. The aid given by the Government to emigrants to Cuba is $28 for adults and $14 for children from two to seven years.

Sugar crop prospects are not as promising as they were in November and December; there has been a persistent drought in a good many localities; in some not a drop of rain fell in four months. Hence the yield of the canes has diminished, and there have been besides many cane-field fires. It was first believed that the crop might reach 800,000 tons; now 600,000 are looked upon as a possible maximum, against 532,344 in 1889, 649,308 in 1888 and 600,136 in 1887. Wherever planters can conveniently do it, they adopt the centrifugal process for good. The amount of sugar now shipped from Matanzas is about as great as that from Havana. Next in importance are Cardenas, Sagua, Caibarien and Cienfuegas, followed by Trinidad, Zaza, Manzanillo, Santiago, Guantanamo, Gibara and Nuevitas. At Matanzas last week 17 vessels were loading sugar for the United States; indeed comparatively little of this year's crop will find its way to Europe. Sugar planting suffers in Cuba more from the lack of sufficient railroads than anything else, and it is to be hoped that in the next few years a favorable change may be wrought and half a dozen lines be completed, as well as an equal number planned be finished. An infusion of American enterprise and capital in this branch would be most welcome. So much money from this country is invested in Cuba in sugar plantations and central sugar houses that a double interest would be served thereby. There are, after all, but few countries South of us as important to us from a commercial and manufacturing point of view as Cuba, in spite of the many drawbacks that cling to the island.

## The Outlook in the Iron Trade.

It is useless to deny that buyers in nearly every line in the iron and steel trades have been pretty thoroughly frightened by the decline which has taken place during the past month. They have gained a victory in the prolonged though quiet struggle for ascendency. Practically they held off since the beginning of the year, and now that the results of that policy are in their grasp, they expect further advantages in the same direction. They are likely to reap some benefits, because quite a number of manufacturers are eagerly trying to book orders, having evidently lost confidence in the future. The offerings of the weak-kneed are in the majority of cases, producing no other effect than to confirm buyers in the continuance of a policy which has done them good service. All sellers are not following that course, knowing as they know that they are making the situation worse.

The heavy pig iron production is unquestionably a grave feature. The exact facts are known and tell seriously. Experience has long taught that a decline even below cost of production does not carry with it an immediate restriction of output. The country at large can very well afford to accumulate considerable stock, which it is not now doing. But there are always concerns, numerous enough to greatly influence the market, which must sell at a sacrifice. Another important point is that we have not unquestioned tangible evidence that consumption is quite up to output. The attitude of buyers during the past ten weeks has been such as to mask the true volume of business very thoroughly. Close observers claim to note and present fragmentary evidence that consumption is enormous. Unfortunately their position is not capable of being fortified by direct statistical proof. In any case, the balance is so evenly loaded that a trifling surplus in either pan tips the beam considerably.

Prices during the rise of the last year were certainly not carried to an extravagant limit. They did not reach a point at which consumption was even moderately curtailed. The main factors in the situation, so far as the demand is concerned, remain to-day what they were three months ago, the most prominent among them, aside from the steady growth of the wealth and population of the country, being the cutting off of imports of soft steel and intermediate products, and the taxing of our capacity particularly on our output of iron ore and of coke. Another feature is the probability that a moderate increase in the demand will take place in this year's requirements for railroad repairs in permanent way and rolling stock. We are inclined to the belief that it is rather the buying than the consumption which has been restricted, and that therefore the present condition of affairs is largely abnormal and therefore temporary.

## Reorganization as a Business.

In one or more of Friday's newspapers appeared an advertisement of the prospectus of a British and American syndicate, who for the purpose of conducting their affairs requested the American public in four of our leading cities simultaneously to subscribe to an issue of $5,000,000 of stock. It was announced the subscription books would open on that day and close on or before the following Wednesday. A visit to their principal office Friday afternoon disclosed the astonishing fact that the subscription books of the new corporation were closed as early as 10 o'clock on that morning and that the whole issue had been taken either by those whose names were announced in the prospectus or new subscribers obtained after the appearance of the advertisement. In answer to the question if the subscriptions called for had not been taken up in England the president of an interested trust company replied that Americans in this country had completed the list beyond those shares reserved in the announcement.

The contemplated business of this organization, although general in character, is to be more particularly confined to the reorganization of firms and corporations into syndicate bodies such as may tend to control the industry of each branch of any kind of business. The remarkable readiness with which $5,000,000 has been obtained for such a purpose is significant. It is true that the sum mentioned is not called for at once. The subscribers bind themselves to that amount subject to call, it being one-half of the proposed capital of £2,000,000. In this proposition are included those shares that for the past few years have become somewhat noted in England as "founders' shares," the holders of which being in this case entitled to four-fifths of the net profits after 5 per cent. has been paid on the ordinary shares, the remaining fifth of the profits belonging to these latter. Founders' shares in this company are divided between the ordinary stockholders and the organizers.

One great incentive to the rapidity and comparative silence of the consummation of this organization is doubtless due to the record of a corporation in London engaged in the same business, whose founders' shares, limited in number, are now quoted on the Exchange at about 8000 per cent. premium, which goes to show the enormous profits of undertakings of this class.

But these profits are only the beginning of the affair, for it may mean a great revo-

lution in the conduct of American business. The principle involved in buying up industries, increasing their capitalization—say one-half—and dividing this increase in the form of stock between the promoters and the stockholders, is questioned as to its soundness, and the gradual decline in the value of the new stock so issued of one of England's largest breweries is an argument in favor of that conclusion. But we see no legitimate reason why at least lower dividends may not be declared so long as the new enterprises are competently and honestly managed. On that point the entire issue rests, and upon it should the attention of contemplating investors be most carefully directed.

We are aware that merchants as a rule look upon this class of business as a form of illegitimate inflation. While from a certain standpoint this may be true, the question before us more particularly directs public attention to the method and its remarkably rapid growth. We have not heard that it has yet been applied to mechanical industries, but because of the likelihood that early attempts of the kind will be made, it may do no harm to call attention to the process. The greatest harm such schemes contain is the room they give for fraudulent representation when the new stock is offered for sale. However much our merchants may object to this class of business, the fact remains that it has already secured a foothold, as the rapid subscription to the mentioned company amply testifies. Therefore, to approve or disapprove of the proceeding is hardly in order, the main point being a thorough comprehension of the method.

---

The first of the Baltimore's 8-inch guns was tested at the naval ordinance proving ground, Annapolis, Md., Friday last, with very satisfactory results. Eight rounds were fired with the following results:

Charge of American brown powder 11.0 pounds
Weight of projectile .....250 pounds
Initial velocity.....foot seconds, 2,130
Pressure.....per square inch, 15 tons

The gun was 35 calibers in length and was made of Bethlehem steel. The surface charge for this caliber is 125 pounds. With a full service charge a much higher velocity will no doubt be obtained. The Bethlehem Company are now furnishing the Navy Department with forgings for 6-inch, 8 inch and 10-inch high-power guns and will soon deliver some 12-inch work.

---

Two steamships of steel are building at Bay City, Mich., for a steamboat company at Kingston, on the North River. The machinery will be made at Detroit. When the steamers are finished they will steam down to Buffalo, where they will be cut in two so as to permit their passing through the locks of the canal. When the two sections of a steamer reach Montreal they will be re-riveted together, and under their own steam go on their various courses. When the steamers are cut in half the break will be made just forward of the boilers. All the large steel boat-builders on the seaboard are so much crowded with work that the steamers above described were contracted for at works on the lakes.

---

The Phœnix Iron Works, of Ironton, have nearly finished the metal-work for the new lighthouse on Coney Island.

# CORRESPONDENCE.

### Armor for Ships of War.

*To the Editor:* There are several very misleading statements in the article you print to-day, entitled "Armor for Ships of War," and we desire to correct them. In the first place, it is not true that "the late trials at Portsmouth discovered an English maker who, with comparatively limited experience, was able to present a plate that proved itself superior to the compound plates of both Cammell and Brown," for the result of the Portsmouth trials was to convince the English Admiralty so thoroughly that the compound steel-faced armor was the best in the world that they gave to Brown & Cammell, of Sheffield, the greatest makers in Europe of this type of armor, orders for over 20,000 tons of armor for their new war vessels, and have agreed to give them some 10,000 tons more a little later on.

In the second place, the all-steel plate made by Vickers, Sons & Co. was distinctly inferior to the all-steel plate made by Charles Cammell & Co., as we can convince you or any of your readers who will take the trouble to look at the photographs and blue prints of both plates now in our office in this city, and, furthermore, their (Vicker's) success has not been recognized by orders placed with them for all-steel armor, the only orders they have received being for 5-inch steel plates for second-class cruisers, which no one who really understands what modern armor is would think of calling armor plates.

It is not true that "compound steel-faced armor plates cannot be satisfactorily welded," nor is it true that the compound plates "are not subjected to inspection and test and are full of blow holes and imperfect welds."

France has not adopted all-steel armor, for up to last year there were 14 French war ships armored with compound steel-faced armor, while only 4 French ships were armored with all-steel. England uses nothing but compound armor on all her war vessels; Germany uses compound entirely; Russia uses all compound; Holland, Denmark, Austria, China, Brazil and the Argentine Republic, use only compound, and Spain, who tried all-steel on one vessel, has reversed its policy and given an order to Charles Cammell & Co. for compound armor for its three or four new war ships now being built in England. Up to last year the total number of ships carrying compound steel-faced armor was 81 and the total number carrying all-steel but 13! This tells the whole story.

In conclusion, the United States has never had a competitive trial between compound steel-faced armor and all-steel plates, but has undertaken to spend millions of dollars in buying all-steel armor in the face of the experience and practice of all the great European Admiralties, with nothing to justify such action but the prejudiced advice of interested persons.

Respectfully yours,
WM. H. WALLACE & CO.
NEW YORK, March 19, 1890.

### Early Iron-Making in East Tennessee.

*To the Editor:* SIR.—At your suggestion I give you the following historical sketch of my father's operations in the iron business in East Tennessee. My father, together with his uncle, George Gordon Mach, forged iron and hollow-ware on White's Creek, three miles above Eagle Furnace, Roan County, Tenn., in 1823, which was the first iron made in Eastern Tennessee. The product was freighted in wagons and sold as far South as Selma, Ala., also in Kentucky and West Virginia. In 1839 he built Eagle Furnace, in Roan County, Eastern Tennessee, he making the first pig iron produced there. The first two years the product was converted into hollow-ware, steamboat grate-bars and mill machinery. In 1843 he made the first shipment of pig iron and grate-bars in flat boats over the Mussle shoals, transferring on to steamer at South Florence, Ala. This shipment was made to Kingsley & Furguson, of St. Louis, for account of Robert Brown. He shipped iron annually after this over the shoals until 1859. In 1849 he constructed at Eagle Furnace puddling furnaces, from which he made blooms and shipped them over the shoals to St. Louis, Cincinnati and Louisville. The largest single shipment he made was in February, 1852, which was pig iron and blooms. He unloaded this shipment from flats at South Florence on to the steamer Robert Patton for Cincinnati, his son James being in charge of the flats. He also built the first steam engine and the first machine shop and foundry in East Tennessee. The East Tennessee Iron Mfg. Company, of which he was general manager, built the first freight cars ever made in East Tennessee, for the Nashville and Chattanooga Railroad in 1853, the contract being for 50 at $600 each. Respectfully,

J. R. CRAVENS.
CHATTANOOGA, Tenn., March 13, 1890.

## NEW ENGLAND NOTES.

At a special meeting of the directors of the Woonsocket Street Railway Company, held Saturday afternoon, it was voted to substitute electricity for horse-power. A contract for the equipment of eight cars with the latest improved overhead system of the Thomson-Houston Company has been made, and a contract also made with the Woonsocket Electric Machine and Power Company for power to run the cars.

Work has been resumed in a measure at S. W. Card & Co.'s tap and dye works, at Mansfield, Mass., whose building was partially destroyed by fire a week ago.

The Grand Council of the Steam Railroad Men's Protective Union has petitioned Congressman Lodge, of Massachusetts, to introduce and advocate a bill to insure greater safety in the management and handling of trains. The points which they desire to secure are: 1, a uniform safety car coupler for freight trains; 2, train brakes; 3, a guard rail on top of box freight cars sufficiently high to prevent men from falling off when slipping on ice or struck by overhead bridges; 4, compelling the employment of at least one brakeman for every ten cars; 5, shorter hours, so that the lives and property will not be intrusted to men worn out with fatigue.

The Union intends to appear before the Congressional committee with counsel and witnesses.

Twenty nail and 35 tack machines, lathes, belting, &c., at the factory formerly occupied by Reed Bros., Brockton, Mass., were sold at mortgagee's sale on Friday.

Hussey & Lord are building a new sawmill and planing works with improved machinery at the iron works site at Gilmanton, N. H

The water commissioners of Lowell, Mass., are discussing the advisability of improving the pumping capacity of the water works, either by rebuilding the existing pumping engines or replacing them by new ones.

A large electric light plant is to be established at Abington, Mass.

A joint committee from Bridgewater and East Bridgewater, Conn., are considering the purchase of the works of the Bridgewater Water Company.

At a meeting of the Berwick Water Company, of York, Maine, the capital stock was placed at $100,000.

The Woonsocket Electric Light and Machine Company are to furnish lighting for Blackstone, Mass.

The E. Horton & Son Company, Windsor Locks, Conn., are adding special tools, such as Brown & Sharpe and Brainard milling machines, shapers, special bevel gear cutters, &c. Some of these tools are of exceedingly ingenious design and construction.

Rochester, N. H., has voted to buy out the Rochester Aqueduct and Water Company.

New alternating machines have been ordered to replace old dynamos at Northampton, Mass., $25,000 in bonds having been issued for the purpose.

A large thread factory is to be built to cost $100,000 by the Kerr Thread Company, at Fall River, Mass. The main building will be 100 x 130 feet and five stories high. The picker building will be 22 x 130 feet and two stories high; the engine-room, 56 x 66 feet and two stories high; the bleaching and dye house, 40 x 110 feet; the boiler-room, 48 x 72 feet; the dry shed, 30 x 70 feet, and the cotton-house, 50 x 80 feet. The mill will have a capacity of 25,000 spindles. Six bids have already been made. W. T. Henry is the architect.

The aldermen of Boston, Mass., have refused to sanction pole rights in that city. The Edison Illuminating Company, of Boston, propose to lay all their electric wires that are now overhead underground.

The Union Mfg. Company's plant, in Manchester, Conn., has been purchased by A. B. Pitkin, of Providence, R. I., who intends to sell the machinery at the earliest opportunity.

## The Carload Cases.

The Interstate Commission, in an opinion by Commissioner Schoonmaker, has decided the cases brought against the trunk lines by F. B. Thurber and others, Thos. L. Greene and Francis H. Leggett & Co., of New York City, known as the "carload cases," in favor of the complainants. Complaint was made of two great differences in rates charged on carload and less than carload quantities. The cases excited widespread interest, and more than 4000 persons, firms and corporations doing business in various sections of the country, filed memorials with the Commission expressing their views for or against the relief sought for by the complainants. The points decided are briefly stated as follows:

Classification of freight for transportation purposes is in terms recognized by the act to regulate commerce and is therefore lawful. It is also a valuable convenience both to shippers and carriers. A clasification of freight designating different classes for carload quantities and for less than carload quantities for transportation at a lower rate in carloads than in less than carloads is not in contravention of the act to regulate commerce. The circumstances and conditions of the transportation in respect to the work done by the carrier and the revenue earned are dissimilar and may justify a reasonable difference in rate. The public interests are subserved by carload classifications of property that on account of the volume transported to reach markets or supply the demands of trade throughout the country legitimately or usually moves in such quantities. Carriers are not at liberty to classify property as a basis of transportation rates and impose charges for its carriage with exclusive regard to their own interests, but they must respect the interests of those who may have occasion to employ their services and conform their charges to the rules of relative quality and justice which the act prescribes.

Cost of service is an important element in fixing transportation charges and entitled to fair consideration, but it is not alone controlling nor so applied in practice by carriers, and the value of the service to the property carried is an essential factor to be recognized in connection with other considerations. The public interests are not to be subordinated to those of carriers, and require proper regard for the value of the service in the apportionment of all charges upon traffic. A difference in rates upon carloads and less than carloads of the same merchandise between the same points of carriage so wide as to be destructive to competition between large and small dealers, especially upon articles of general and necessary use, and which under existing conditions of trade furnish a large volume of business to carriers, is unjust and violates the provisions and principles of the act. A difference in rate for a solid carload of one kind of freight from one consignor to one consignee, and a carload quantity from the same point of shipment to the same destination consisting of like freight or freight of like character from more than one consignor to one consignee, or from one consignor to more than one consignee, is not justified by the difference in cost of handling.

Under the official classification the articles known in trade as grocery articles are so classified as to discriminate unjustly in rates between carloads and less than carloads upon many articles, and a revision of the classification and rates to correct unjust differences and give these respective modes of shipment more relatively reasonable rates is necessary and is so ordered.

## PERSONAL.

Gilman Brown, superintendent of the Harris Woolen Company, Woonsocket, has resigned after 20 years of continuous service. He will retire from active business.

J. N. Harris, of Henry R. Worthington, manufacturers of pumps, has sailed for Europe in the City of Paris.

W. H. Searles was elected president of the Civil Engineers' Club of Cleveland, W. R. Warner retiring in rotation.

W. G. Richards, for several years past engaged in car-wheel and locomotive work, has taken the superintendency of the American Car Wheel Company's Works, in Boston, Mass.

Charles N. Cramp, of the shipbuilding firm, was before the Senate Committee on Commerce on Saturday last.

J. Tatnall Lea, of Philadelphia, left for a trip in the South last week.

Henry R. Towne has returned to Stamford, Conn., after a few weeks' absence.

Theo. D. Morgan, formerly superintendent of the Calumet Iron and Steel Company, at Calumet, Ill., has been appointed superintendent of the mill of the Roanoke Rolling Mill Company, Roanoke, Va., dating from March 1.

Millard Hunsicker has resigned his position as assistant secretary and general agent of the Carbon Iron Company, at Pittsburgh. For the present his address is care of the Duquesne Club, Pittsburgh.

J. H. Sheadle, secretary of the Mahoning Valley Manufacturers' Association since its organization, has resigned his position, to take effect on April 1 next. Mr. Sheadle will locate at Cleveland, where he has accepted a position with the Cleveland Iron Company.

H. S. Fleming has resigned his position as general superintendent of the Cameron Coal and Iron Company, at Emporium, Pa., and will leave on April 1. After that date his address, temporarily, will be at Lansdowne, Delaware Co., Pa., and 206 Walnut place, Philadelphia.

## VIRGINIA IRON NOTES.

The iron mine of Hughes & Bramblett, located in Wythe County, is to increase its daily output by the addition of new machinery.

The Peale Knob Iron Company have been organized to develop mineral lands near Pulaski City. A furnace is to be erected.

A company at Talesville have recently purchased a tract of mineral land which they propose to develop.

A furnace will be erected at Basic City by the Heman Iron Company, of Philadelphia, Pa. The Basic City Mining and Mfg. Company also intend building a 100-ton iron furnace.

The Staley Creek Iron and Manganese Company, recently chartered by the Legislature, has elected A. C. Cummings president and J. S. Apperson secretary. This company own extensive iron and manganese properties that are to be opened at once.

A company is being organized at Roanoke to build a stove works.

The Shenandoah Mining and Land Improvement Company have been organized at Milnes, to lay out a town and develop mining properties.

The Virginia Nail and Iron Works Company intend increasing the daily output at their mines, near Balcony Falls, from 50 to 100 tons.

Valuable mineral properties in Page County are to be developed by D. F. Kazez, A. J. Brand, B. C. Rust and others.

The Wythe & Speedwell Mining and Mfg. Company have concluded arrangements with the Virginia Development Company by which they transfer all their Cripple Creek properties to the latter company for the sum of $350,000. These properties include 11,000 acres of mineral and farming lands and four charcoal furnaces and several mills.

A steel and iron plant, it is reported, will be established at Bedford City.

The Glasgow Manganese and Mineral Company were organized at Lexington last week, with ex-Gov. Fitz Hugh Lee as president.

The Glenwood Furnace Company will, it is now stated, erect two iron furnaces at Glasgow, to cost upward of $300,000.

Lynchburg is gradually building up an iron business that promises to undergo considerable further expansion. Two small furnaces, with a combined daily output of 90 tons of pig, are enjoying just now a business that taxes the capacity of their plants. Muck and merchant bar, gas and water pipe and machinery are also being manufactured there, and give employment to more than 500 operatives. The Washington Zinc Works is another industry recently established in that city, which employs a new process that is said to be very satisfactory. These works have a daily output of 2 tons pure metallic zinc.

Colonel McCarthy, who was recently mentioned as having been prospecting at Greensboro, N. C., with a view of establishing a steel plant at that place, has been in Lynchburg the past week. He has definitely decided to locate a plant at Salem, and probably one in Lynchburg, where he will utilize Pittsylvania and Campbell County ores, he having taken options on 15,000 acres of red hematite bed.

A company is being organized at Vinton with a capital stock of $25,000 to build file works.

H. C. Davis, of the Nothern Pacific Railroad, has gone to Puget Sound to select a site for a shipyard in which can be built the largest ships afloat, but the chief object is to build barges for the company's Northern Pacific lake line.

# TRADE REPORT.

## Chicago.

Office of *The Iron Age*, 50 Dearborn street, CHICAGO, March 19, 1890.

(*By Telegraph.*)

**Pig Iron.**—The heavy decline in Coke Iron two weeks ago has been followed by an improvement in the number of inquiries for nearly all kinds of Iron. Some of them came from consumers and some from holders of speculative lots, who have been hanging on to their Iron in the hope that reaction was close at hand. All are trying to feel the market and the common question is "Will it go any lower?" It is needless therefore to say that the break in prices has not increased sales. Those who must have Iron buy small lots to cover immediate wants. Large contracts cannot be closed at what is called the market price. Buyers have no confidence in present values, and the endeavor on the part of furnace agents to press sales is only adding demoralization to consternation. There are still a few makers left who refuse to meet the cut that has been made, but the only benefit that they will obtain will be piling up their Iron in the yard. To others, selling has become a dire necessity and where large stocks have accumulated they are refusing no offer that will afford them a reasonable profit. The statements made last week that large blocks of Iron were sold by the local makers in competition with Southern Iron, thus breaking the price, are not based upon facts as obtained from the sellers. Southern makers are giving liberal discretion to their agents and many of them are inclined to take advantage of their instructions to the greatest degree. Manufacturers say that they have never before known prices to decline so much in so short a period at any time before in the history of the trade, and they hold that the rapid decline will be an advantage, as the bottom will be sooner reached, and that reaction must occur on account of the present heavy consumption among foundries making all descriptions of finished material. Lake Superior Charcoal Iron has not suffered to the same extent, but sales have fallen off and prices slightly weakened. We make the following quotations, cash, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $21.75 @ $22.00 |
| Local Coke Foundry, No. 1 | 18.00 @ 18.50 |
| Local Coke Foundry, No. 2 | 17.50 @ ..... |
| Local Coke Foundry, No. 3 | 17.00 @ ..... |
| Bay View Scotch | 17.00 @ 17.50 |
| Am. Scotch (Strong Soft), No. 1 | 20.00 @ 20.50 |
| Jackson County, Soft and Silvery, No. 1 | 19.25 @ 19.50 |
| Southern Coke, No. 1 | 18.00 @ ..... |
| Southern Coke, No. 2 | 17.50 @ ..... |
| Southern Coke, No. 3 | 17.00 @ ..... |
| Southern Gray Forge | 16.00 @ ..... |
| Southern Mottled | 15.50 @ ..... |
| Tennessee Charcoal, No. 1 | 20.50 @ 21.00 |
| Alabama Car-Wheel | 24.00 @ 25.00 |
| Bessemer | 22.00 @ 22.25 |

**Bar Iron.**—The inquiry for Bars has been exceptionally good. Prices are weak and irregular and some decline in quotations has occurred, but not in such marked character as in the Pig Iron trade. Manufacturers are quoting on car specifications 1.80¢ flat as a rule, though there are several mills which would probably shade this price 2½¢ @ 5¢. On regular orders, quotations range from 1.80¢ to 1.85¢, half extras, f.o.b. Chicago. From store in small lots prices range from 2¢ to 2.10¢. The demand is fair and increasing.

**Structural Iron.**—There are lots of inquiries and a good many orders are being booked for present and future delivery. Prices are firm and no change is contemplated. Manufacturers report better prospects than they have had for many years covering the same period. The apparent disposition on the part of the laboring men to strike for higher wages is the only feature in the trade which they fear will occur to interrupt what now promises to be a very prosperous season. Foundries are having a large amount of work on hand for buildings where iron columns are being substituted for wood and for others being remodeled from residences to business property.

**Plates, Tubes, &c.**—A number of fair-sized orders were placed during the week, and some are on the market. Sales agents in comparing figures on a recent order for Plate Iron which they lost discovered that the difference in prices quoted by the representative houses covered a range of $7 per ton. There is a great deal of demand for Nos. 10 to 14 gauge Sheets, some of the mills being so full that they are compelled to refuse further quotations. There has been a slight decline in mill prices for average stock. Carload lots are quoted as follows, f.o.b. Chicago: Tank Iron, 2.45¢; Tank Steel, 2.70¢; Nos. 10 to 14 Iron Sheets, 2.80¢; Steel do., 3¢. Store prices are as follows: Nos. 10 to 14 Steel Sheets, 3¢ @ 3.10¢; No. 16 do., 3.30¢ @ 3.50¢; No. 18 do., 3.35¢ @ 3.50¢; Tank Steel, 2.80¢.

**Sheet Iron.**—There continues to be considerable inquiry for Black Sheets. Mills are not inclined to shade the prices below 3.10¢ for No. 27, but this is higher than consumers are willing to pay.

**Galvanized Iron.**—Standard grades are in good demand and some of the mills are refusing orders. Prices on this class of Iron are firm and regular. Standard Juniata is quoted in jobbing lots at 62½ % off and Charcoal at 62½ % and 5 % off, f.o.b. Chicago. On the low grades there is much seeking for orders and prices are weak and demoralized.

**Merchant Steel.**—There are no changes in the condition of the Merchant Steel market. Certain mills continue to have plenty of orders, while others are in need of more to keep their works in full operation. While there is no great cutting, it can be said that prices are weakening and in competition would probably be reduced on open quotations. Manufacturers quote, f.o.b. Chicago: Toe Calk and Open-Hearth Spring, 2.75¢ @ 2.85¢; Open-Hearth Machinery, 2.75¢ @ 3¢. Small lots from store are quoted as follows: Bessemer Bars, 2.50¢ rates; Toe Calk and Spring, 3¢ @ 3.25¢; Ordinary Tool, 7.50¢; Crucible Sheets, 7¢ @ 10¢.

**Steel Rails and Fastenings.**—The demand for Light Rails has been very good. Quite a number of desirable orders have been placed during the week and negotiations are in progress for several round lots of standard sizes. The Illinois Steel Company continue to quote $36 @ $37.50. There have been numerous inquiries for Splice Bars, and several orders placed on which manufacturers are quoting 1.85¢, but rumor has it that this price has been shaded. Spikes are quoted at $2.25; Bolts at 2.80¢ @ 2.85¢ for Square Nut and 2.95¢ @ 3¢ for Hexagon do.

**Old Rails and Wheels.**—Lately Eastern Mills have been trying to buy Old Rails in this market and prices they offer are less than holders are willing to take. One sale of 200 tons is reported at $24, but the price offered is about $23 @ $23.50. Old Steel Rails are in active demand and stocks scarce. Short lengths are quoted at $21.50 and long pieces at $22 @ $22.50. Trade in Old Wheels is very quiet; prices range from $19 to $19.50. There has been considerable inquiry for stock from Southern buyers, but adding the freight to price demanded here makes sales impossible.

**Scrap.**—There is practically nothing doing in the Scrap trade. It would seem that there are no buyers for the better grades of material, but this does not have much effect upon the price demanded by dealers. Dealers' quotations are as follows, per net ton: No. 1 Forge, $19.25; No. 1 Mill, $15.50; No. 2 Mill, $11; Fish Plates, $22.50; Pipes $14.50; Axles, $23.75; Machinery Cast, $13.50; Cast Borings, $9.50; Wrought Turnings, $14.50; Stove Plate, $10.50; Mixed Steel, gross ton, $18.50; Coil Steel, $20.25; New Scrap Steel, $19; Tires, $22.40.

**General Hardware.**—Business is unchanged from conditions noted during the last three weeks. The quantity of goods going into retailers' hands is very large and covers lines of articles that will not be saleable for some months, yet manufacturers who sell the jobbing trade are doing more or less complaining. In their purchases last year, foreseeing the advance, jobbers anticipated their wants and are not in want now of many lines of goods that makers are offering. Prices remain firm and unchanged on Shelf and Heavy Hardware. The demand for Carriage and Wagon stocks and Blacksmiths' Tools is increasing.

**Nails.**—The demand for Nails is very light, considering that it is now past the middle of the first spring month. Manufacturers are harassed with requests from parties who bought Nails last fall to reduce the price or cancel their orders. Makers cannot see upon what grounds buyers have the right to claim a reduction and yet in nearly every instance concessions are made to correspond with the present prices. Manufacturers are quoting Cut Steel Nails in round lots at $2.25, f.o.b. Chicago, but are not booking many orders. The Nail mill of the Loughlin Nail Company, which has been idle for some time, was started up on the 17th inst. and will be run to full capacity. There is possibly more demand for Wire Nails and the shutting down of the factories has added something in sustaining prices. Manufacturers are still quoting $2.85 in round lots. Jobbers quote on Steel Cut Nails $2.40 in large lots and $2.45 in small lots. On Wire Nails they quote small lots at $3 @ $3.10 from stock.

**Barb Wire.**—There is nothing new in the market for Barb Wire. The demand does not improve very much and for such orders as come up there is strong competition. Eastern manufacturers appear willing to name the lowest prices. Quotations in this market for Painted are 3.40¢ in small lots and 3.30¢ in carloads and for Galvanized the usual advance of 60¢ per cwt.

**Pig Lead.**—The market remains quiet and fair transactions are reported. Sellers are not inclined to meet buyers and total sales aggregate only about 200 tons. Nominal quotations are 3.80¢ bid and 3.85¢ asked.

---

Parkes & York have opened an office at Rooms 700 and 701, Phenix Building, Chicago, where they will conduct a commission business in Iron and Steel, Railroad Supplies, Coke and Iron Ore. John C. Parkes, of this firm, was for many years general manager of the North Chicago Rolling Mill Company. His friends will welcome him back in the trade after his several months' rest, which he was greatly in need of. James E. York is well and favorably known to the trade and needs no additional recommendation.

Under date of March 17, Pickands, Brown & Co. write: In your Cincinnati report of last week is an announcement of large sales of Pig Iron by us, and attributing to this cause the break in prices. The statement is not warranted by facts, as large sales were not made, nor were any sales made in competition with Southern Irons. As the representatives of the Illinois Steel Company's Pig-Iron Department we are always in the market to sell, but don't wish to be represented as making sales that we have not accomplished.

## Philadelphia.

Office of *The Iron Age*, 220 South Fourth St.,
PHILADELPHIA, Pa., March 18, 1890.

**Pig Iron.**—The outcome of the past week's business has again been very much of a disappointment. There has been a good deal of inquiry from large buyers, and it may be that sales have been made, but on terms and conditions which for prudential reasons have not been made public. But there is no concealing the fact that prices are lower, and are still very much unsettled. The lowest figures which sellers are willing to admit are $16.75, delivered, for Gray Forge, $18.50 for No. 1 Southern and $19 for Pennsylvania brands. These, of course, are the lowest prices reported; quite a number of brands are firmly held at materially higher figures—say $17.50 for Gray Forge and $20 for No. 1 Foundry, with others offering at quotations varying all the way between the two extremes, according to circumstances. On such a market as the trade are now experiencing it is impossible to define it with strict accuracy, but there is no doubt that the continued depression has developed a state of things bordering close on to demoralization. Buyers hesitate to make offers, fearing that prices may be still lower in the near future, while in many instances sellers show a similar hesitancy in quoting, fearing that they may lose a sale by naming a price higher than some of their competitors. The result is no regular prices for anything—simply a go-as-you-please market. Whether this state of affairs is warranted by the actual conditions remains to be seen. As we have remarked from time to time recently, local furnaces are well fixed, having orders on their books for their product for weeks to come, so that many of the leading companies are for the present practically out of the market. Some of the smaller concerns, however, are less favorably situated, and are under the necessity of finding a market from week to week, so that there is no alternative but to accept such prices as consumers are willing to pay. During the past couple of weeks Southern companies have been soliciting business, resulting in a gradual decline of 50¢ to $1 per ton in some brands of Foundry Irons. This may be only temporary, or it may become general; all depends on the continuance and the extent of Southern competition. On this point it is impossible to form any decided opinion at present, but it must be confessed that the outlook for better prices is not encouraging. All that can be expected under the circumstances is a heavier demand at current rates. The immense production, following the recent decline, has done much toward convincing buyers that there will be an abundance of Iron at moderate prices, and that it is useless to carry large stocks in anticipation of a rise. Of course there may be a reaction; there probably will be, but if there is it will be from a lower level of prices than are quoted to-day. Large buyers have to be arranged with before any reaction can come, and what prices they are willing to pay is yet to be determined. At present $17, $18 and $19 @ $19.50, delivered, are the ruling prices for the three leading grades, but at these figures no large lots are called for. The Chickies Iron Company, however, inform us that they sold 1000 tons within the past few days at $19 at furnace.

**Bessemer Iron.**—There is absolutely no demand for large lots of Bessemer at present, so that prices are purely nominal at about $20.50 at furnace. There is no pressure to sell, however, as the furnaces have their entire product engaged for a long time to come. High grade Bessemer moves in a small way at about $25.50 at furnace, with only a limited supply. Since writing the above a bid of $20.25 at furnace has been made for a round lot of several thousand tons.

**Spiegeleisen.**—Nothing doing except in small lots of 20 % at about $35 for spot lots. Summer shipments nominal at about $34, duty paid.

**Ferromanganese.**—Small lots of 80 % sell at from $93 to $95 spot, or $85 for summer shipment.

**Steel Rails.**—There is very little change in this department. Prices are fairly maintained at $35 at mill, although on one or two 5000-ton lots a concession of 50¢ ℔ ton was offered for desirable deliveries, and orders for about 15,000 tons taken on that basis by Pennsylvania mills. There is no special urgency to sell, but the easier condition of raw material has induced some of the mills to modify their prices in proportion, so that $34.50 @ $35 seem to be fair average quotations.

**Billets and Slabs.**—It was remarked in our last issue that it was difficult to give exact quotations, but to-day it is a still more difficult matter, as there are free sellers, but no buyers. At a venture we may say that $32 @ $33.50, delivered, would be pretty near the market, although a dollar more or a dollar less should cause no surprise, as prices are liable to very sudden changes in times like these.

**Blooms.**—Prices about $52 @ $53 "℔ Bloom ton" for Hot-Blast Charcoal, and $54 @ $55, delivered, for Cold-Blast. Runout Anthracite, $44 @ $45, and Scrap Blooms, $35 @ $36, delivered in consumers' yards.

**Muck Bars.**—The market is very unsettled and prices hard to quote. Some ask $31 at the mill, others $30.50, while some quote $30 and have shaded even that figure to secure a prompt sale. But there is very little demand and bids for any but small lots are not easily obtained at any reasonable price.

**Bar Iron.**—The demand is very slow, and some mills are beginning to run a little short of work. Prices remain pretty steady, however, 1.90¢ @ 1.95¢ being inside figures for city deliveries, and 1.80¢ @ 1.85¢ at country mills. There is no disposition among buyers to break these prices. What every one wants to see is a better demand rather than lower prices. Prospects are not specially encouraging at the moment, neither is there any apparent reason for expecting serious falling off in consumption, so that the chances are that current rates will be maintained for the present.

**Skelp Iron.**—There is no demand of any importance, although buyers intimate that they are ready to place orders at some concessions from asking rates, which are 1.90¢ @ 1.95¢, delivered, for Grooved and 2.05¢ @ 2.10¢ for Sheared.

**Plates.**—A little more activity may be noted in this department, although prices are still weak, at some concessions from our last quotations. Quite a number of small and medium sized lots have been taken, and in at least one instance a 500-ton order was entered for one of the shipyards. The indications seem to favor a more active movement in the near future, but until the mills begin to fill up with work prospects for higher prices are not promising, but all depends on the demand. Asking prices are about as follows for lots delivered to consumers:

| | Iron. | Steel. |
|---|---|---|
| Tank | 2.20 @ 2.25¢ | 2.50 @ 2.60 |
| Bridge Plate | 2.25 @ 2.30¢ | ..... |
| Shell | 2.40 @ 2.50¢ | 2.80 @ 3.00 |
| Flange | 3.15 @ 3.25¢ | 3.10 @ 3.20 |
| Fire-Box | 3.75¢ | 3.75 @ 4.25 |

**Structural Material.**—Business in this department keeps up pretty well. Mills are not gaining much in the way of new business, but there is enough to keep them fully employed, so that prices are maintained at about the following prices: 2.25¢ @ 2.30¢, delivered, for Universal Plates; 2.20¢ @ 2.25¢ for Iron Bridge Plate; 2.20¢ @ 2.25¢ for Angles, with 15¢ @ 20¢ more for the same in Steel. Tees, 2.7¢ @ 2.8¢; Beams and Channels, 3.1¢ for either Iron or Steel.

**Sheet Iron.**—The demand appears to be better in this department than almost any other in the finished Iron trade. Mills are running to their fullest capacity, without accumulating very much stock, so that prices are well maintained at former quotations, which for carload lots are as follows:

Best Refined, Nos. 14 to 20.....3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24.....3.20¢ @ 3.30¢
Best Refined, Nos. 25 to 26.....3.40¢ @ 3.50¢
Best Refined, No. 27.....3.50¢ @ 3.60¢
Best Refined No. 28.....3.60¢ @ 3.70¢
Common, ¼¢ less than the above.
Best Soft Steel, Nos. 14 to 20.....3½¢
Best Soft Steel, Nos. 21 to 24.....3¾¢
Best Soft Steel, Nos. 25 to 26.....3⅞¢
Best Soft Steel, No. 27.....4⅛¢
Best Bloom Sheets, 1-10¢ extra over the above prices.
Best Bloom, Galvanized, discount.....60 %
Common, discount.....62½ %

**Old Rails.**—Business is very light—supply and demand being of the most limited character. There are buyers, however, at about $26, Philadelphia, for small lots, or $27 delivered to mills in the interior, but no sales have been reported during the past three or four days.

**Scrap Iron.**—The demand is a trifle better, but there is no material change in prices, which are about as follows: No. 1 Wrought, $24 @ $24.50, Philadelphia, or for deliveries at mills in the interior $24.50 @ $25.50; $16 @ $17 for best Machinery Scrap, $15 @ $15.50 for ordinary, $16.50 @ $17 for Wrought Turnings, $11 @ $11.50 for Cast Borings, and $26 @ $28 for Old Fish-Plates, and $18 @ $19 for Old Car-Wheels.

**Nails.**—The demand is increasing and first-class Nails are firmly held at $2.05 to $2.10 for carload lots, and $2.20 from store. Other descriptions, however, are forced on the market without much regard to price, sales having been made at $2.00 and less for prompt cash.

**Wrought Iron Pipe.**—Business is improving and mills are now very full of orders. Prices firm with discounts as follows: Butt-Welded Black, 47½ %; Butt-Welded Galvanized, 40 %; Lap-Welded Galvanized, 47½ %; Lap-Welded Black, 60 %; Boiler Tubes, 1¼ inches and smaller, 45 %; Boiler Tubes, 2 to 4 inches, 50 %; Boiler Tubes, 4½ inches and larger, 52½ %; Oil Well Casing, 50 %.

---

Isaac McHose & Sons, Norristown, Pa., send out a circular stating that E. R. Mann & Co., of Philadelphia, will be the sole agents for the sale of their Acme Low Phosphorus Pig Iron, which is guaranteed:

Phosphorus.....03 % or lower.
Sulphur.....04 % or lower.
Silicon.....1 to 2 %

## Cincinnati.

Office of *The Iron Age*, Fourth and Main Sts.,
CINCINNATI, March 19, 1890.

*(By Telegraph.)*

The result of the recent break in the prices of Pig Iron has been to kill business, at least for the present. The heavy orders secured by the large Southern companies, the competition for which accelerated the decline, have not been followed by other transactions of magnitude. On the other hand, there have been rumors of liberal concessions granted or to be introduced within a short time, which has had the effect to cause large buyers to hold off. The general market knows of no such decline as is reported at the close and the light trading has been on the basis re-

ported a week ago. In some instances Iron held by speculators has been offered at even lower prices, one lot of 1000 tons No. 2 Southern Foundry being offered from Louisville at $15.75. The prices which are understood to be current by the trade are $12 for Gray Forge, $12.50 for No. 3, $13 for No. 2 and $13.50 for No. 1 Southern Foundry, all cash at furnace at Birmingham, the freight to Cincinnati being $3.15, the advance of 15¢ on the 15th inst. not being taken into account. It was learned to-day, however, that much lower prices have been made, and it is claimed that No. 1 Southern Foundry can now be purchased at $15.50, cash, Cincinnati, and that even small lots of several hundred tons have been sold on this basis. It is reported, also, that No. 2 is obtainable at $15.50, No. 3 do. at $14.50, and Gray Forge at $14, cash, Cincinnati, with sales of 1000 tons No. 2 Soft at $14.50, cash, Cincinnati. That the market is unsettted is evident, and what the exact market is is difficult, if not impossible, to tell. A drop of $3.50 in the price of Pig Iron in ten days seems almost incredible from a trade standpoint, especially with no better reasons than have already been assigned. In the minds of some who have knowledge of the inner workings of stock operations in the South the low quotations are taken as significant of greater changes to follow. In fact, it is believed that an effort is to be made to consolidate not only the small but the large interests in the South, and that low prices for Iron are but a part of the general scheme, from which some benefit is expected to be derived by would-be purchasers. How much or how little there may be in this view must be left to the intelligence of those concerned or interested. By others it is surmised that prices are being depressed to afford a better opportunity to large buyers to make favorable contracts, but this belief receives little credence. There are a few large buyers awaiting a favorable moment to buy, and any indication of a hardening in tone would be followed by higher prices if there is nothing in the report of radical changes to take place among the Southern furnaces and companies. At the moment the trade is in a temperament to credit any such reports. Prices are unsettled to a great extent. We quote nominally:

*Foundry.*

| | |
|---|---|
| Southern Coke. No. 1 | $16.50 @ $17.00 |
| Southern Coke. No. 2 | 15.50 @ 16.00 |
| Southern Coke. No. 3 | 14.50 @ 15.00 |
| Ohio Soft Stone Coal, No. 1 | 16.50 @ 17.00 |
| Ohio Soft Stone Coal, No. 2 | 15.50 @ 16.00 |
| Mahoning and Shenango Valley | 16.50 @ 17.00 |
| Hanging Rock Charcoal, No. 1 | 20.00 @ 22.00 |
| Hanging Rock Charcoal, No. 2 | 18.50 @ 19.00 |
| Tennessee and Alabama Charcoal, No. 1 | 17.50 @ 18.50 |
| Tennessee and Alabama Charcoal, No. 2 | 18.00 @ 18.50 |

*Forge.*

| | |
|---|---|
| Gray Forge | 14.50 @ 15.00 |
| Mottled Neutral Coke | 14.00 @ 14.50 |

*Car-Wheel and Malleable Irons.*

| | |
|---|---|
| Southern Car-Wheel | 22.50 @ 23.25 |
| Hanging Rock, Cold Blast | 21.50 @ 24.25 |
| Lake Superior Car-Wheel and Malleable | 22.50 @ 24.25 |

## Louisville.

LOUISVILLE, KY., March 17, 1890.

**Pig Iron.**—The market is dull and but little Iron has changed hands during the past week, although inquiries are coming in freely. Speculative lots of Iron have been offered at as low as $15.50 for No. 2 Foundry, delivered at Louisville, without effecting sales, showing that consumers, while they need Iron, will not buy until absolutely compelled to do so, as the low prices offered lead them to believe that holders are bound to sell, and they think they may be able to work prices even lower. The leading furnaces are still holding prices firm as per our last week's quotations, so we make no change:

| | |
|---|---|
| Southern Coke, No. 1 Foundry (new classification) | $17.40 @ $17.90 |
| Southern Coke, No. 2 Foundry (new classification) | 16.90 @ 17.40 |
| Southern Coke, No. 3 Foundry (new classification) | 16.40 @ 16.90 |
| Gray Forge | 15.90 @ 16.40 |
| White and Mottled, different grades | 15.15 @ 15.65 |
| Silver Gray, different grades | 15.90 @ 16.40 |
| Southern Charcoal, No. 1 Foundry | 18.75 @ 19.75 |
| Southern Charcoal, No. 1 Mill | 17.50 @ 18.00 |
| Southern Car-Wheel, standard brands | 23.50 @ 24.50 |
| Southern Car-Wheel, other brands | 19.25 @ 21.75 |
| Hanging Rock Coke, No. 1 Foundry | 18.75 @ 19.25 |
| Hanging Rock Charcoal, No. 1 Foundry | 22.00 @ 22.50 |
| Hanging Rock, Cold Blast | 24.00 @ 26.00 |

## Detroit.

WILLIAM F. JARVIS & Co., under date of March 17, 1890, say: The recent tumble in the price of Southern Iron has had the effect of inducing considerable purchasing in all directions for these grades, and Northern Foundry Irons also. It is evident that buyers are well satisfied with the new prices, and the effect of this purchasing, which in the aggregate will be a very large tonnage, may shape the market toward better figures in the near future. Lake Superior Charcoal Iron has been dull. A few transactions, however, have taken place, showing that prices are firm for this grade. It has been in no manner affected by the break in Foundry Irons, as far as can be seen at the present time. The market is quotable as follows:

| | |
|---|---|
| Lake Superior Charcoal, all numbers | $22.00 @ $23.00 |
| Lake Superior Coke Bessemer | 22 50 @ 23.50 |
| Katahdin (Maine Charcoal) | 26.00 @ 26.50 |
| Lake Superior Coke Foundry, all ore | 20.50 @ 21.00 |
| Lake Superior Coke Foundry, cinder mixed | 19.00 @ 20.00 |
| Standard Ohio Blackband | 19.75 @ 20.50 |
| Southern No. 1 | 18.50 @ 19.00 |
| Southern Gray Forge | 16.25 @ 16.75 |
| Jackson County (Ohio) Silvery | 19.25 @ 19.75 |
| Old Car-Wheels (nominal) | 20.00 @ 21.00 |

## Cleveland.

CLEVELAND, March 17, 1890.

**Iron Ore.**—The cold weather in the Northwest having dispelled all thoughts of an unusually early opening of navigation, some attention is again being given to the Ore market itself. There is an increasing demand from Eastern Steel manufacturers for high grade Bessemer Ores, and although the bulk of the contemplated output for 1890 was believed to have been disposed of weeks ago, sales are continually being reported of quite substantial amounts. There is no change in prices, unless it may be a little more firmness in quotations. During the past week the local dealers have been asked for at least 240,000 tons of Non-Bessemer Ores of all varieties. The sales made, however, have generally been confined to small lots. Vesselmen have abandoned hopes of beginning business in Ore transportation early in April, and with these hopes has gone the prospect for single-trip Escanaba charters at 90¢ @ $1 ₱ ton. The engagements made during the week just closed were based on the regular rate of $1.10 from Escanaba, $1.25 from Marquette and $1.35 from Ashland and Two Harbors.

**Pig Iron.**—There has been a somewhat improved demand for Lake Superior Charcoal Iron and prices are quite firm at $22.50 @ $22.75, cash. Otherwise the general situation may be characterized as dull and lifeless. Buyers are asking for only very small quantities—too small, indeed, to make the prices paid for them of much significance. It is considered remarkable that in the face of these naturally depressing conditions quotations remain reasonably firm and the furnacemen correspondingly confident of an early and substantial improvement.

**Old Rails.**—There have been a few sales during the week of Old Americans at $25.50, at which price they may now be bought in great plenty. Heavy Axles are inquired for, but no Old Wheels seem to be wanted.

**Manufactured Iron.**—Bar Iron is very weak and prices are uncertain, about 1.70¢ @ 1.75¢ probably being paid from store. Sheets are scarce and high.

**Coke.**—The contemplated advance has not yet been announced, but is hourly anticipated from the fact that large orders at present prices are not accepted.

(*By Telegraph.*)

Sales of 20,000 tons of No. 1 Bessemer Ore, at $4.50, have been made this week. Inquiries are still pouring in for Bessemer, but only one 5000-ton sale is reported on the basis of prices prevailing early in the winter. The Pig-Iron market is very dull and without special feature.

## Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts., CHATTANOOGA, March 17, 1890.

**Pig Iron.**—It would be impossible now to make any report giving the correct status of prices. Some large sales have been made at a basis of $14.75 for No. 1 and a great many at figures that range from $15 to $15.50. An examination, however, into the sales of some of the furnaces shows that the present scare is hardly justified—there were a great many private parties who held sales accounts at stated figures whose hearts failed them entirely. The furnaces recognize the fact that prices have gone down, but they are not at all demoralized. They ask the question: How much can the Northern stacks reduce their prices? If prices should go down much more many of them must blow out, and under the present volume of consumption the Southern stacks will control prices. The future, of course, is looked forward to with much interest, especially by those who have new plants under construction.

**Miscellaneous.**—The Southern Iron Company are about to take steps to thoroughly overhaul their rolling mill plant here, and will erect as soon as possible two large Siemens-Martin furnaces that will have a capacity of about 70 tons per day, and will have the works turning out Steel in about 90 days. It is understood that they will continue to add to their capacity as fast as they can until it reaches 300 to 400 tons per day. It is not the intention of the company to make Rails, at least not for the present, but the product will be turned into Bar, Plate, Wire Rod, Structural, Sheet, &c.

## St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st., ST. LOUIS, March 17, 1890.

**Pig Iron.**—There is no noticeable improvement either in regard to volume of business or in the matter of prices. The pressure to sell is becoming more apparent, and those who were rampant bulls only a short time since are now undecided as to what the outcome will be, and express themselves accordingly. Mill Irons are somewhat easier to the extent of from 25¢ to 50¢. Foundry Irons, however, show a trifle more strength, and with an improved demand this latter class of Iron would be firmly maintained. Consumers are, of course, disposed to make the most of the present weakness and are holding off for still lower figures. Whether their views will prove correct or not it is uncertain to say. It is evident, however, that notwithstanding the weakness, there are some who believe that the market will soon take a turn toward higher prices. During the week under review a number of small lots changed hands, but there

was nothing of any magnitude that would be worthy of mentioning. The following quotations show the basis on which sales were made:

| | |
|---|---|
| Southern Coke, No. 1 Foundry, | $18.00 @ $19.50 |
| Southern Coke, No. 2 Foundry, | 17.25 @ 17.75 |
| Southern Coke, No. 3 Foundry, | 16.75 @ 17.25 |
| Gray Forge | 16.00 @ 16.50 |
| Southern Charcoal, No. 1 Foundry | 19.25 @ 19.75 |
| Southern Charcoal, No. 2 Foundry | 18.50 @ 19 00 |
| Missouri Charcoal, No. 1 Foundry | 19.50 @ 20.00 |
| Missouri Charcoal, No. 2 Foundry | 18.50 @ 19.00 |
| Ohio Softeners | 19.50 @ 20.00 |

Connellsville Coke, f.o.b. East St. Louis, $5.65; St. Louis, $5.80.

**Bar Iron.**—In sympathy with Pig Iron this department shows signs of weakness. Mills are not so well supplied with orders and are inclined to shade prices to obtain same. We quote as follows: Lots from mill command from 1.90¢ to 2¢. Small lots from store, 2.05¢ @ 2.15¢, according to circumstances.

**Barb Wire.**—Under date of 15th inst., the freight rate to Texas points has been restored from 15¢ ℔ cwt. to 70¢ ℔ cwt. Naturally this increase will curtail the buying movement from that section, and mills will be compelled to look for new territory in which to sell their product Prices show an inclination toward weakness, but at this writing no extremely low prices have been quoted. The following quotations are named: Painted, 3.45¢; Galvanized, 4.05¢; Carload lots, 10¢ ℔ cwt. less than above prices.

*(By Telegraph.)*

The market shows no signs of improvement and the buying during the past three days has been very light. Three hundred tons Gray Forge changed hands yesterday on a basis of $16, f.o.b. St. Louis. Unless the demand shows material improvement during the next few weeks a lower range of prices will more than likely be the result, especially as there is still some Iron held by speculators. Until this is disposed of any decided improvement is, to say the least, uncertain. The quotations in my report of the 17th inst. are equally applicable to-day.

## Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, March 18, 1890.

**Pig Iron.**—The general position of the market is much the same as that noted in our report of a week ago; demand is still for small quantities, and there is not likely to be any improvement as long as prices continue weak and drooping. It is the opinion of some well-informed brokers that the turning point has been almost reached, and that consumers who are now refusing to buy a single ton beyond actual wants will before long be obliged to pay more for their Iron. This is the situation. There may be a change at any time and consumers be buying all they can get hold of at an advance possibly of 50¢ or $1 a ton. Bessemer Iron has gone off fully $1 ℔ ton during the past week, having sold down to $20, cash, but Forge Irons have not declined so much; Bessemer is off $4 as compared with the highest point, and it is rumored that it has been offered within the past day or two below the price quoted. Furnacemen say that prices cannot be cut much more, that cost of production has been reduced to the lowest possible limit, and that there is very little margin at present rates, which may be fairly quoted as follows:

| | | |
|---|---|---|
| Neutral Gray Forge | $16.75 @ $17.25, | cash. |
| All Ore Mill | 18.00 @ 18.25, | " |
| White and Mottled | 16.00 @ 16.50, | " |
| No. 1 Foundry | 19.50 @ 20.00, | " |
| No. 2 Foundry | 18.50 @ 19.00, | " |
| No. 1 Charcoal Foundry | 24.00 @ 25.00, | cash. |
| No. 2 Charcoal Foundry | 22.00 @ 22.50, | " |
| Cold Blast Charcoal | 28.00 @ 30.00, | " |
| Bessemer Iron | 20.00 @ 20.50, | " |

Some furnacemen who are working on contracts made some time ago, when prices were a good deal better, would not accept prices above quoted, but others less fortunate, having no contracts and anxious to sell, have sold at our quotations, and some of them would sell more. Mahoning and Shenango Valley furnacemen are to a considerable extent held responsible for precipitating the recent break in their great anxiety to sell.

**Muck Bar.**—There appears to be a little more doing, but at no improvement in prices. Sales reported all the way from $28.75 to $30.25, according to quality and delivery. The outside price must have been for special lots, as ordinary Muck can be had at $28.50 @ $29, and not much call for it at that

**Manganese.**—Small sales of 80 % domestic Ferro for immediate or near-by delivery at $96 @ $97. Contracts for foreign future delivery can be made considerably below prices quoted, but the inquiry at present, what little there is, appears to be for small lots for immediate delivery.

**Manufactured Iron.**—There is a fair business; most of the mills are pretty fully employed, and with some good weather, which is not likely to be much longer delayed, there will no doubt be a largely increased demand. There is every reason to believe that the requirements of the West and South, upon which Pittsburgh is largely dependent for a market, will be fully equal to if not in excess of those of 1889. Prices remain about as last quoted: Bars No. 1 quality, 1.90¢; do. made from Old Rail Iron, 1.85¢; Plate Iron, 2.30¢ @ 2.35¢; No. 24 Sheet, 2.90¢ @ 3¢; Skelp Iron, 1.80¢ @ 1.85¢ for Grooved and 2.10¢ @ 2.15¢ for Sheared, all 60 days, 2 % off for cash.

**Nails.**—The Nail Trade continues very dull, but with better weather a material improvement in demand is looked for. Prices remain unchanged. Steel Cut Nails, $2.25, 60 days, 2 % off, in carload lots and $2.35 for less than carload. Wire Nails, $2.75, 60 days, 2 % off for cash, in car lots.

**Wrought Iron Pipe.**—This important interest continues much the same as noted in our report of a week ago; but for the bad weather and bad roads trade would be much better than it is. Prices remain unchanged. Discounts on Black Butt-Welded Pipe, 47½%, do. Galvanized 40, %; on Black Lap-Welded Pipe, 60 %; on Galvanized do., 47½ %; Boiler Tubes, 1¼ inch and smaller, 45 %; 2 to 4 inch, 50 %; 4 inch and larger, 52½ %; Casing, all sizes, 50 % off.

**Structural Iron.**—There is considerable inquiry, which it is expected will sooner or later lead to considerable business. No change in prices. Angles, 2.30¢; Tees, 2.75¢; Channels, 3.10¢; Sheared Bridge Iron, 2.80¢; Universal Mill Plates, 2.45¢; Refined Bars, 2¢.

**Steel Plates.**—While prices continue offish, there is a very fair business, which will be increased as the season becomes more advanced. Fire Box, 4¼¢ @ 4¼¢; Flange, 3¼¢; Shell, 3.05¢; Tank, 2.75¢.

**Merchant Steel.**—A continued fair demand is reported, but there has been no recent change in prices. Tool Steel, 8¢ ℔ lb and upward; Crucible Spring Steel, 4¢; Open-Hearth, base sizes, 2¼¢ @ 3¢; Bessemer Machinery, 2¼¢; Tire Steel, 2.65¢.

**Billets, Blooms, &c.**—The market for Bessemer Steel Billets continues considerably demoralized and prices have further declined. We now quote at $32 @ $35.50, and some few sales are reported as low as $31.50. Nail Slabs about the same as Billets. A few months ago it was difficult to supply the demand for Billets; now it is the other way, with a decline in prices of $4 @ $5 ℔ ton.

**Old Rails.**—The demand for Old Rails continues very meager and prices are weak. We quote at $25 @ $26, with a sale reported at $25.62½, delivered at Youngstown. Old Steel Rails remain about as last quoted—$22 @ $22.50.

**Steel Rails.**—New Steel Rails continue weak and prices have further declined. We now quote at $33.50 @ $34.50, on cars at mill, with a sale reported at $33.50. The demand has fallen off somewhat, and it is to be expected that buyers will hold off in view of the downward tendency of the market.

**Railway Track Supplies.**—There is no improvement to report in the demand as yet, but it is hoped and expected that there will be soon. Prices are weak but without quotable change, although for a desirable order it is probable the prices quoted would be cut. Spikes, $2.15, 30 days, on cars at works here, and $2.25 delivered at Chicago, and St. Louis. Splice Bars, 1.95¢ @ 2¢; Track Bolts, 2.90¢ @ 3¢ with Square, and 3.10¢ @ 3.20¢ with Hexagon Nuts.

**Old Material.**—The demand for everything in this line continues light and prices weak and difficult to quote correctly, as there is so little doing. No. 1 Wrought Scrap, $22, net ton; Old Car Axles, $28 @ $28.50; Cast Scrap, $15.50 @ $16, gross ton; Cast Borings, $12 @ $12.50; Old Car-Wheels, $19 @ $20. We can report a sale of Steel Bloom Ends at $22.

*(By Telegraph.)*

The situation remains substantially unchanged. It is said that those furnacemen who have been pressing the market for buyers of late did so because they were in need of money, and now that they have sold it is believed that the worst is about over. A good many furnacemen are refusing to sell at extreme low prices quoted. It is said that Bessemer Pig has been offered as low as $19.50, cash, but no actual sales have as yet been reported below $20, cash. Sales of Bessemer Steel billets reported as low as $30 @ $30.50, cash. The weather continues bad and country roads in all directions in an impassable condition. Reports from all quarters say there will have to be some good weather before business can improve much.

## New York.

Office of *The Iron Age*, 66 and 68 Duane street, NEW YORK, March 19, 1890.

**American Pig.**—Transactions have been on a moderate scale, the pressure to sell, notably Southern Irons, having the effect of scaring buyers. In a number of cases the lots offered for sale at low prices are blocks of Iron arriving long after they were due. The sellers had been forced at the proper time for delivery to replace them with other Irons. These tardy shipments are now thrown on the market. In some cases the Iron has not cost the dealers as much as prices now quoted and shading is therefore more freely indulged in. The Southern companies are pushing sales at the utmost, and are offering No. 1 Foundry at $18.25 @ $18.50, while Gray Forge has sold in round blocks at $16.50 @ $17, delivered. Northern Standard Irons are held at $19 @ $19.50 for No. 1, nominally.

**Scotch Pig.**—There have been some sales of the lower grades of Scotch Pig.

Eglinton being taken at $21.50 while Dalmellington is quoted $22.50 @ $22.75.

**Spiegeleisen and Ferromanganese.**—There has been no business in Spiegeleisen, which may be quoted nominally $34 @ $34.50 for 20 %. The dockmen's strike in Liverpool is delaying shipments of Ferromanganese, so that another period of scarcity of spot is threatened.

**Billets.**—The market is very dull and weak. Mills are drumming for work industriously and low prices have been named. Thus $35.50 delivered in New England has been quoted for carload lots. We quote $32 @ $32.50 at sellers' works.

**Wire Rods.**—There have been some small sales at $50 @ $51.

**Steel Rails.**—The market is exceedingly dull and entirely nominal. No transactions of any consequence are reported, and it stated that Rails could be placed without difficulty at $34 @ $34.50 at Eastern mill.

**Plates.**—The market continues weak and irregular, with a moderate amount of business passing. We quote Steel Shell, 2.7¢ @ 2.9¢; Flange, 2.85¢ @ 3.14¢, and Tank, 2.45¢ @ 2.5¢, delivered.

**Merchant Steel.**—The first indications of weakness in this line have come from the West. We quote Machinery, 2.35¢ @ 2.4¢; Tire, 2.35¢ @ 2.4¢, and Toe Calk, 2.4¢ @ 2.5¢.

**Old Rails.**—In the absence of business we quote the market nominally $24.50 @ $25 for Tees. Old Steel Rails, long lengths, are nominally $21.50.

**Scrap.**—There has been no business. Holders ask $22.50 @ $23 for No. 1 Wrought.

## Financial.

The general business situation is to some extent unsettled. Among disturbing influences are Western freight rates, unseasonable frost in the wheat-growing region as well as in the extreme South, floods in the Mississippi, a gigantic struggle between colliery owners and miners in England and Wales, in which 170,000 workmen are engaged, and perhaps more than all, as affecting the movement of merchandise, is the well-nigh impassable condition of country roads in every direction. On the other hand, the money outlook is improved and a grain movement of unusual magnitude will occur simultaneously with the resumption of navigation by lake and canal. As bearing on the freight question, the Interstate Commission, on the 16th inst., in an opinion by Commissioner Schoonmaker, decided the cases brought against the trunk lines by F. B. Thurber and others, Thomas L. Green and Francis P. Leggett & Co., of New York City, known as the "carload cases," in favor of the complainants. Complaint was made of too great differences in rates charged on carload and less than carload quantities. The cases excited widespread interest. Further developments affecting the granger situation may be expected to day, when the Central Traffic Association roads will meet to try and arrange a schedule of seaboard rates. The decline in the rates of ocean freight is the subject of remark. While as yet rates show no approach to the low range that existed in the spring of 1888, they nevertheless present a striking contrast to those that existed last month. Now that the rush of cotton shipments is over, there are some who look for a permanent decline, as a consequence of the excessive amount of new tonnage. On February 15 grain room to Liverpool was in good demand at 5½d; yesterday the nominal price was 4d asked. Flour is now quoted at 13/9 to Liverpool, which is a decline of 5/ @ 6/3. Cotton, which on February 15 was quoted at ¼d, is now ⅛d. A number of steamers are being laid up, from the impossibility of handling cargo at Liverpool pending the strike.

Stocks have been irregular, with a strong undertone. The squeeze in Reading was quickly followed by news of the purchase by the Chicago, Burlington and Quincy of control of the Chicago, Burlington and Northern, an event supposed to have important bearings on the Western rate question, by removing a bone of contention. Still, Canadian competition remains, and an irrepressible conflict exists between the lake and rail lines to secure the traffic in grain stored in Chicago elevators and at other points. On Friday and Saturday a rise in the Vanderbilts was a feature. On Monday Reading improved on reports that there was a large outstanding short interest, which must be covered before the petition for the removal of Mr. Corbin from the presidency is presented to the court. It also became known that the South Pennsylvania Railroad had changed hands, presumably in the interest of Reading, and would be immediately reorganized. The latest cables report intense excitement in Berlin and an uneasy feeling in London in consequence of Prince Bismarck's resignation, and this news tended to make traders rather bearish in their views.

Government bonds firmer. The 4s closed ¼ % higher bid. Quotations as follows:

| | |
|---|---|
| U. S. 4½s, 1891, registered | 103½ |
| U. S. 4½s, 1891, coupon | 103½ |
| U. S. 4s, 1907, registered | 122 |
| U. S. 4s, 1907, coupon | 122⅞ |
| U. S. currency 6s, 1895 | 116 |

The Associated Banks of New York reported a gain in reserve of $839,450, which raises the surplus above legal requirements to $1,050,800. The banks gained largely through the Treasury bond purchases, but lost through the movement of currency. The items show a contraction in loans of $1,548,000, a falling off in deposits of $352,000 and a gain in specie and legal tenders combined of $751,400.

Money shows no sign of approaching stringency, which some have looked for, at least until after the April settlements. Successive reductions of the rate of discount of the Bank of England and the renewal of Treasury disbursements in the purchase of 4 % bonds are two events conducive to easy money. Foreign banking houses are heavy lenders, and there appears to be a good supply, chiefly from bankers' balances and bank accumulations. Time money is 5½ % for three to four months on mixed collateral, 5 % for six to twelve months on dividend-paying stocks and 6 % for six months on trust stocks. Commercial paper quiet. The best double-name paper is quoted 5½ @ 6 % and prime single name at 6 @ 7 %. As demonstrating the willingness of capital to accept small return on safe investment the allotment of the City of Boston ten-year 4 % miscellaneous loan at 104.281 is of interest. At the rate named the return to the investor is about 3⅞ %. The Harlem River Bank was opened near the corner of 110th street and Third avenue, capital $100,000. Albert H. Leszynsky is the president.

Sterling exchange was weaker but fairly steady at $4.82¼ @ $4.85¼. A special shipment of $365,000 in gold was received. The market was affected by a further reduction of the Bank of England rate to 4 %. In London bar silver was quoted at 43½d @ 44d per ounce. Silver certificates here were higher at 95¼.

The value of the mineral oils exported during February was $3,139,123, against $3,509,479 in February, 1889. The total for the eight months ending February 28 was $35,435,086 in 1890 and $33,441,979 in 1889. The exports of cotton during February show a slight falling off, being 208,286,606 lb, valued at $21,439,137; but the total for the last six months was 2,010,312,995 lb, valued at $203,060,502 while for the six months ending February 28, 1889, the exports were 1,721,854,377 lb, valued at $171,342,025.

The total exports of breadstuffs during February reached a value of $14,639,608, against a value in February, 1889, of $8,293,765. The exports for the eight months ending February 28, 1890, reached an aggregate value of $94,847,578, against a total for the eight months ending February 28, 1889, of $82,108,465. The chief gain for the eight months has been in flour, the value for the eight months just passed being $37,025,197, and for the eight months ending February 28, 1889, $30,190,536.

The clearings of 51 cities last week were $1,132,645,733, an increase of 6.1 %. New York gained 3.1 %, Boston 13.6, Philadelphia 13.3, Pittsburgh 21.3, Chicago 7.9, St. Louis 12.3, Cincinnati 9.4, Louisville 10.8, Detroit 9.8, Cleveland 18.6.

The total east-bound shipments by the trunk lines from Chicago last week were 90,364 tons, against 68,016 tons for the same period in 1889.

Exports at this port for the week, $7,617,000; total since January 1, $74,941,000, against $74,564,000 for the same time last year.

The merchandise markets are generally quiet. Breadstuffs are irregular and slow and easier for wheat; export business very small. Corn is firm. Coffee quiet, closing steady. Spot cotton quiet and 1/16¢ lower. Rubber has further advanced. Buyers have paid up to 85¢. Lumber movement free at sustained prices. Petroleum certificates are at the lowest point for a long time. Provisions are stronger. Sugar, raws steady, refined easier by 1/16¢ @ ⅛¢. Ocean freights depressed and irregular. Dry goods jobbing active. Small stocks and high cotton are the resisting influences.

## Metal Market.

**Copper.**—The London spot quotation a week since was £47. 15/ and futures £48; to-day it is respectively £47.5/ and £47.15/, sales during the interval summing up 760 tons. Our own market has been featureless and moderately active at 14⅛¢ @ 14¼¢ Lake Ingot, Wire Bars at 14⅜¢ @ 14½¢, Common Casting Brands 12¾ @ 12⅞¢ and Arizona 13¢ @ 13⅛¢. It is rumored that a sale of Lake Copper has been effected to manufacturers. Reports as to quantity and price vary widely. In their circular, dated March 3, Messrs. James Lewis & Son, Liverpool, express themselves as follows: "Furnace material has only been sold to a limited extent, but at full prices. Holders are firm and expect that smelters will shortly have to replenish their stocks, which must now be nearly exhausted, as they have purchased very little since November last. Recent sales of American Matte have been chiefly to Sulphate of Copper manufacturers, for which there has been a very strong demand at high prices." The import of American Copper into Liverpool and South Wales during the first two months has been 3542 tons Fine, against 5948 tons same time last year and 5131 in 1888. The net export of Ingot Copper from the United States in 1886 has been 11,576,166 lb, against 26,420,272 in 1888. The stock and visible supply in England and France on March 18 was 91,970 tons, against 95,150 on March 1 and 95,700 on February 1.

**Tin.**—At the time of our last week's report the spot quotation in London was £90. 15/, and that of futures, £91. 10/; to-day the former is cabled £90. 7/6 and the latter are £91. 2/6, sales aggregating 350 tons in the meantime. At first active

on the report that a couple of hundred tons intended for New York would be delayed by an accident to the steamer Egypt in England, our own market subsequently relapsed into a more quiet mood. Spot was 20.35¢ then, and winds up to-day at 20½¢. The net import of Tin into the United States in 1889 has been 34,976,593 lb, as against 34,170,183 in 1888.

*Tin Plates.*—Have been featureless and dull. Consumers hold off, not being pressed for a supply, spot or future, just for the present, and looking with suspicion on the English market, where heavy stocks begin to cause weakness. We quote at the close, per box: Siemens-Martin Steel, Charcoal finish, $5.25 @ $6; Coke finish, $5.10 @ $5.20; Coke Tins, Penlan grade, $4.45 @ $4.50; J. B. grade, $4.65 @ $4.70, and Wasters, $4.37½. The net import of Tin Plates into the United States in 1889 has been 740,155,937 lb, as compared with 667,236,880 lb in 1888, showing an increase of 11 % in a single twelvemonth.

**Lead.**—Sales have been confined to 200 tons Common Domestic in this market at 4¢ down to 3.95¢, the closing figure being 3.97½¢, below which no Lead can be had. St. Louis gave away from 3.80¢ to 3 77½¢, while Chicago remains 3.80¢ @ 3.85¢.

**Spelter.**—Our market has been excessively flat and dull, with only a few minor parcels sold at 5.15¢ @ 5.20¢, Common Domestic, which is the quotation at the close. Silesian is meanwhile again lower in London, £21.10/, against £22 last week, and is nominally worth 6¼¢ here.

**Antimony.** — The stock remains light, while the demand is fair at 26¢ for Cookson's brand, and 20¢ Hallett's.

### New York Metal Exchange.

The following sales are reported:

THURSDAY, March 13.

| | |
|---|---|
| 32 tons Lead, spot | 3.97½¢ |
| 16 tons Lead, April | 4.00 |

FRIDAY, March 14.

| | |
|---|---|
| 25 tons Tin, March | 20.53¢ |
| 10 tons Tin, spot | 20.35¢ |
| 10 tons Tin, March | 20.40¢ |
| 30 tons Tin, March | 20.50¢ |
| 35 tons Tin, March | 20.60¢ |
| 16 tons Lead, spot | 3.97½¢ |

SATURDAY, March 15.

| | |
|---|---|
| 100 tons Lead, spot | 3.95¢ |

MONDAY, March 17.

| | |
|---|---|
| 15 tons Lead, May | 3.97½¢ |

## Coal Market.

The Anthracite Coal market is without visible improvement, wholesale agents referring to the situation in terms of undisguised discontent. Schedule prices are out of all calculations. Still, it would be disloyal to admit that they are even slightly shaded. "Individuals," however, no matter who the principals may be, come in for round abuse. This alleged disreputable class are selling for any price they can get, allowing no would-be buyer to leave the office unsatisfied. The conference of sales agents last week amounted to nothing. Indeed, they could name no definite prices without showing their hand—*i. e.*, expressing in figures the range of transactions actually taking place and giving away the market. In this light even the proposition to hold a meeting might have been ill-advised, because concerted action was impracticable. And for like reason an adjournment to another date, the 17th inst., may have been of doubtful expediency. It is understood that the output for March shall not exceed 2,000,000 tons; for April the same unless the situation improves.

Stove and Egg are selling as low as $3.50, f.o.b., and Chestnut as low as $3.25, alongside. On the cars at Newburg or Highland, Poughkeepsie Bridge, Reading prices are: Broken, $3.55; Egg, $3.65; Stove, $3.80; Chestnut, $3.70, by sail or rail. Pea and Buckwheat are still scarce and commanding any price from $2.85 to $3.10, alongside, for Pea, and $2.25 @ $2.40, alongside, for Buckwheat. A circular for April received by several dealers shows an extrême decline of 70¢ ₱ ton for domestic sizes compared with the spring of 1889.

The following is a statement of shipments of Anthracite Coal for the week ending March 8 compared with the same same period last year:

| Regions. | Mar. 8, 1890. | Mar. 9, 1889. | Difference. |
|---|---|---|---|
| Wyoming | 232,012 | 269,020 | Dec. 37,668 |
| Lehigh | 77,714 | 94,489 | Dec. 16,775 |
| Schuylkill | 131,804 | 119,876 | Inc. 11,928 |
| Totals | 441,530 | 483,385 | Dec. 41,855 |
| Total for one yr. to date | 4,676,476 | 5,252,410 | Dec. 575,934 |

Philadelphia advices of the 19th inst. speak of several heavy Baltimore contracts just closed. Freights from Port Richmond to Boston $1. Cars are in better supply.

## Imports.

**Hardware, Machinery, &c.**

Aukamm & Co., Mach'y, cs., 8
Borgfeldt, Geo. & Co., Hdw., cs., 4
Boker, Hermann & Co., Arms, cs., 18
Degrauw, Aymar & Co., Chains, 8; do., cks., 6
Folsom, H. & D., Arms Co., Arms, cs, 5
Godfrey, Chas. J., Arms, cs., 21
Godwin & Sons, Gun Barrels, cs., 3
Jones, S. W., Propeller Blades, 4
Meacham Arms Company, Mdse., cs., 6
Pim, Forwood & Co., Hdw., cs., 20; Nails, kegs, 24
Shoverling, Daly & Gales, Arms, cs., 6
Sheldon, Geo. W. & Co, Chains: cks., 10; Guns, cs., 5
Stoddard, Lovering & Co., Mach'y, pgs, 25
Werlemann, H., Arms, cs., 14
Wiebusch & Hilger, Mdse., cs., 37; Anvils, 293; Hardware, cs., 25
Witte, John G. & Bro., Cutlery, cs., 14
Order—Hdw., cs., 3; Mach'y, pkgs. and cs., 38

## British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, March 19, 1890.

The Pig Iron market showed little change until Friday, when a sharp advance in warrants took place—Scotch selling on that day at 5½—owing to the aspect of the labor question in the coal districts in the North of England. Some stimulus was also given by reports of continued decrease in stocks of Iron in store, but prices have since reacted under the influence of realizations. Tuesday's closing figures were 50/11 for Scotch, 51/4½ for Cleveland and 63/7½ for Hematites. To-day there were sales at 50/9 @ 51 for Scotch, 51/6 @ 51/7½ for Cleveland, and 64/3 for Hematites. Speculation in Scotch has been active, but little has been done in Cleveland or Hematites. On Tuesday one block of 1000 tons Scotch was purchased at 51/1. Makers' prices for Scotch and Middlesborough are somewhat higher, as a rule, but Bessemer is now offered at 70/.

The Tin-Plate position is unsettled and trade is still unsatisfactory. It is believed that if the combination to restrict production is carried through things will speedily mend; otherwise the outlook is not bright. A meeting has been held at Llanelly for the purpose of coercing the employees of Norwoods, who as yet refuse to join the movement for a general stoppage. At present 62 works are idle and four will probably stop work soon. Eighteen are yet unaccounted for. Some leading firms controlling the best mills are among those that have stopped. The Liverpool market appears neutral to the movement, which fact is attributed to lack of authoritative statements from makers as to their position and purposes

Block Tin improved during the week and advanced to £90. 12/6 for prompt, owing chiefly to easier rates for money and more gossip calculated to attract speculation. Information given as to future supplies from the Straits, however, differs considerably.

Copper, after declining somewhat, advanced to £47. 15/ on considerable improvement in the cash demand, and on Thursday as high as £48 was paid for prompts. Since then, however, there has been a reaction to £47. 7/6. A large part of the warrants circulating on the market latterly has been absorbed by consumers, and the prospects are considered brighter. Stocks decreased 2000 tons during the first half of the month. Recent sales of furnace material include 190 tons Montana Matte at 10/, 100 tons ditto on private terms and 1675 tons Anaconda Argentiferous Matte, private terms; all at Liverpool.

**Scotch Pig.**—Business has been moderate, but the market is steadier, with slightly higher prices asked for most brands.

| | | | |
|---|---|---|---|
| No. 1 Coltness, | f.o.b. Glasgow | | 73/ |
| No. 1 Summerlee, | " | " | 72/ |
| No. 1 Gartsberrie, | " | " | 70/6 |
| No. 1 Langloan, | " | " | 70/6 |
| No. 1 Carnbroe, | " | " | 53/6 |
| No. 1 Shotts, | " | at Leith | 73/6 |
| No. 1 Glengarnock, | " | Ardrossan | 73/ |
| No. 1 Dalmellington, | " | " | 61/ |
| No. 1 Eglinton, | " | " | 53/6 |

Steamer freights, Glasgow to New York, 2/; Liverpool to New York, 10/.

**Cleveland Pig.**—There has been rather more demand and the market is looking firmer. Makers quote No. 3 Middlesborough at 51/6. f.o.b.

**Bessemer Pig.**—Selling prices are off about 2/, and there is little business doing. Makers quote West Coast brands, Nos. 1, 2 and 3, at 70/, f.o.b. shipping port.

**Spiegeleisen.**—There is a fairly active business at slightly easier prices. English 20 % quoted at 125/, f.o.b. at works.

**Steel Rails.**—No improvement in the demand has taken place and prices are without further change. Heavy sections quoted at £6 and light sections £6. 15/ @ £7, f.o.b. at N. W. England shipping point.

**Steel Blooms.**—The market continues slow, and a further shading of prices has been made. We quote £6. for 7 x 7, f.o.b. at N. W. England shipping point.

**Steel Billets.**—Dealings on a moderate scale and prices rather weak. Bessemer, 2½ x 2½ inch, £6, f.o.b. at N. W. England shipping point.

**Steel Slabs.**—A dull market and prices in buyers' favor. Bessemer, £6, f.o.b. at N. W. England shipping point.

**Old Rails.**—The demand moderate and sellers name easier prices. Tees quoted at £3. 7/6, and Double-Heads £3. 10/, f.o.b.

**Scrap Iron.**—Very little doing and prices without important change. Heavy Wrought quoted £3. 5/, f.o.b.

**Crop Ends.** — Sales have continued moderate and prices are nominal in a great measure. Bessemer quoted £4. 2/6, f.o.b.

**Tin Plate.**—Trade has continued moderate and prices are still unsettled. We quote, f.o.b. Liverpool:

| | |
|---|---|
| IC Charcoal, Alloway grade | 17/6 @ — |
| IC Bessemer Steel, Coke finish | 15/ @ 16/ |
| IC Siemens " " " | 15/6 @ 16/3 |
| IC Coke, B. V. grade | 14/6 @ 15/6 |
| Charcoal Terne, Dean grade | 14/6 @ — |

**Manufactured Iron.**—The market has continued quiet. Prices are rather weak, with 10/ decline quoted on Staffordshire Common Bars and Sheets. We quote, f.o.b. Liverpool:

| | £ s. d. | | £ s. d. |
|---|---|---|---|
| Staff. Marked Bars | | @ | 10 0 0 |
| " Common " | | @ | 8 10 0 |
| Staff. Bl'k Sheet, singles | | @ | 10 5 0 |
| Welsh Bars (f.o.b. Wales) | 7 12 6 | @ | 0 0 0 |

**Tin.**—Business moderate and only slight momement in prices. Straits quoted at £90. 5/, spot, and £91 for three months' futures.

**Copper.**—A fairly active demand and prices fairly firm. Chili Bars quoted at £47. 5/, spot, and £47. 12/6, three months' futures. Best Selected, £54.

**Lead.**—The market very quiet and prices barely steady. Quoted at £12. 7/6 for Soft Spanish.

**Spelter.**—Prices easier and the demand moderate. Quoted at £1. 15/ for Ordinary Silesian.

# Foreign Markets.

EQUIVALENTS.

| | Cents. |
|---|---|
| Franc, Peseta or Lira | 19.3 |
| Florin (Netherlands) | 40.2 |
| Florin (Austria) | 35.9 |
| Milreis (Portugal) | $1.08. |
| Milreis (Brasil) | 54.6 |
| Mark (Germany) | 23.8 |
| **Pounds** | |
| Kilogram | 2.205 |
| Picul | 134. |

## EAST INDIES.

COLOMBO, CEYLON, January 16, 1890.—*Plumbago.*—A moderate business has been done at the following steady rates in rupees ₹ ton: Large Lumps, 190 @ 230; Ordinary Lumps, 170 @ 220; Chips, 100 @ 120, and Dust, 65 @ 90. Shipments since October 1 sum up to date as follows, with the previous year's figure set against each: To England, 58,094 cwt., against 22,509; to Hamburg, 6964, against 1250; to Antwerp, 2884, against 1801; to Bremen, 368, against 456; to Australia, 53 against 88, and to the United States, 81,009, against 22,209; together, 149,380, against 48,334 in 1889, 93,782 in 1888 and 80,025 in 1887. *Exchange.*—Six months' sight, on London, 1/5¾.—*Volkart Bros., Ceylon and Malabar Coast, through their agent in New York, Mr. John W. Greene, 82 Wall street*

## SPAIN.

BILBAO, February 22, 1890.—*Iron Ore.*—But few sales of note have been effected during the week, although the demand continues good at 9/6 @ 10/3 for superior and 8/6 @ 9/3 inferior Rubios, while Campanil has to be quoted 12/ @ 12/6. The export for the week reached 124,889 tons. Many steamers are arriving in search of cargoe, so that next week's shipments are likely to again exceed 100,000 tons. Freights are sustained. Total shipments since January 1 amount to 649,368 tons, against 602,569 last year and 564,909 in 1888. *Pig Iron.*—The week's export has been 4730 tons.—*Bilbao Maritimo y Comercial.*

## ITALY.

ROME, March 8, 1890.—*Agricultural Machinery.*—A grand international trial of sowing machines for plains and mountainous regions is to come off at Toggia, in Apulia, between October 20 and November 30. Manufacturers may be represented by their Italian agents. Suitable prizes will be awarded, and the railroads and ocean steamships will take both passengers and machines at reduced rates. Applications have to be made up to September 15 to the Comitato Ordinatore, Toggia, Italy. *Coal.*—At the time of the opening of the St. Gothard Tunnel the owners of Westphalian Coal mines were looking forward to a large and increasing export of Coal to Italy, but these hopes have not been fulfilled, as the table beow demonstrates:

*Net Import of Coal into Italy.*

| | Total tons. |
|---|---|
| 1880 | 1,728,677 |
| 1881 | 2,063,785 |
| 1882 | 2,168,357 |
| 1883 | 2,342,998 |
| 1884 | 2,598,828 |
| 1885 | 2,948,844 |
| 1886 | 2,919,679 |
| 1887 | 3,575,059 |
| 1888 | 3,8 6,791 |
| 1889 | 3,989,757 |

—*Cico.*

## HOLLAND.

ROTTERDAM, February 28, 1890.—*Tin.*—About 13,000 piculs Billiton offered in public sale at Batavia on the 25th inst. fetched the average price of 62⅝ florins, Indian currency costing to sell here about 54¾ florins per steamer. The next sale, comprising the same quantity, will be held on Tuesday, April 22. The following statement shows the position of Banca Tin in Holland on February 28, from the official returns published by the Dutch Trading Company:

| | 1890. Slabs. | 1889. Slabs. |
|---|---|---|
| Import in February | 6,959 | 11,700 |
| Total two months | 10,953 | 26,700 |
| Deliveries in February | 14,700 | 13,790 |
| Total two months | 23,483 | 21,740 |
| Stock, second hand | 22,253 | 29,150 |
| Unsold stock | 138,611 | 141,071 |
| Total stock | 160,864 | 170,221 |
| Afloat, piculs | 3,600 | 4,600 |

*Statement of Billiton.*

| | 1890. Slabs. | 1889. Slabs. |
|---|---|---|
| Import in February | 4,000 | 1,940 |
| Total two months | 26,200 | 5,238 |
| Deliveries in February | 11,750 | 7,205 |
| Total two months | 22,650 | 11,740 |
| Stock | 34,057 | 12,798 |
| | Piculs. | Piculs. |
| Afloat | 21,000 | 27,500 |
| Quotation 28th February, Banca | fl. 55 | fl. 58 |
| Quotation 28th February, Billiton | fl. 54½ | fl. 58 |

*Export of Tin from Holland.*

| | Twelve months. | | |
|---|---|---|---|
| | 1889. Tons. | 1888. Tons. | 1887. Tons. |
| To Germany | 6,195 | 6,334 | 5,122 |
| To England | 145 | 161 | 501 |
| To Belgium | 931 | 798 | 907 |
| To France | 284 | 411 | 393 |
| To Hamburg | 535 | 399 | 565 |
| To the United States | 405 | 400 | 607 |
| To other countries | 629 | 654 | 795 |
| Totals | 9,122 | 9,157 | 8,890 |

*De Monchy & Havelaar.*

## GERMANY.

HAMBURG, March 8, 1890.—*Iron.*—Pig Iron is a little easier; Spiegel may be quoted 103 marks ₹ ton for 10 to 12 % Manganese. Finished Iron is steady, makers being under contract to the full extent of their capacity for five months to come. Some satisfactory sales have been made by them even for export. Bessemer Steel Rails are 165 @ 175 marks. Pig-Iron production and consumption in Germany during the last decade:

| | Production. | Consumption. |
|---|---|---|
| 1889 | 4,387,504 | 4,552,090 |
| 1888 | 4,229,484 | 4,281,199 |
| 1887 | 3,907,364 | 3,798,459 |
| 1886 | 3,528,658 | 3,395,229 |
| 1885 | 3,687,434 | 3,660,345 |
| 1884 | 3,600,612 | 3,599,106 |
| 1883 | 3,469,719 | 3,433,816 |
| 1882 | 3,380,806 | 3,425,378 |
| 1881 | 2,914,009 | 2,851,685 |
| 1880 | 2,729,038 | 2,679,425 |
| Totals | 35,834,728 | 33,676,732 |

—*Borsenhalle.*

## BELGIUM.

BRUSSELS, March 8, 1890. — *Iron.* — The Belgian markets have been slightly gaining in strength; makers of Thin Sheets have held a meeting and resolved to maintain ruling rates. Belgium produced last year 847,260 tons of Pig Iron, against 826,850 in 1888; 547,518 tons finished, against 223,638, and 236,186 tons of Steel, against 185,417. *Phosphate.*—Quite important Phosphate deposits have been discovered near Liege and a number of companies formed to work them, half a dozen of them being actively engaged in their operations, including fresh borings. The Phosphate is found at the depth of 18 to 25 metres, and the most of it deficient in carbonate of lime. It has a good deal of marl. The percentage of Phosphate of Lime is between 50 and 63 %; the deposits measure in diameter from 2-5 to 1 metre.—*Moniteur des Interêts Materiels.*

## Mr. Potter Resigns.

(*By Telegraph.*)

CHICAGO, March 19: At the meeting of the directors of the Illinois Steel Company, in New York, during the latter part of this month, O. W. Potter will formally resign from the chairmanship of the Executive Committee. His son, Mr. E. C. Potter, will at the same time resign from the office of the second vice-presidency. Both resignations will take effect on April 1. In order that the board might be prepared to fill the vacancies Mr. Potter deemed it advisable to notify several of the principal stockholders in advance. This information evidently leaked out and increased as it spread until it spread in proportions large enough to create a sensation in commercial circles and materially depress the market price of the stock of the company. The resignation of Mr. Potter from the active management of this company is only carrying out a course that was adopted when the present company were organized and the necessity thereof confirmed by his medical adviser last summer. Mr. Potter has been the managing head of this institution from the infancy of the North Chicago Rolling Mill Company, covering a period of 33 years, during which he was unable to absent himself from his duties for any length of time. This constant and continuous strain upon his nerve forces has made it injudicious for him to continue in the active management of this gigantic concern any longer, and in compliance with the best medical advice and the wishes of his family he will withdraw from the company and seek the rest he so much needs. E. C. Potter entered the employ of the North Chicago Rolling Mill Company immediately after leaving college, and, with the exception of two short vacations, has been closely confined to business for the past 11 years. He resigns his office and position partly in compliance with his father's desire to have his company in recreation and travel. Mr. Potter will spend the early part of the summer at his beautiful summer residence on Lake Geneva and next fall, in company with his family, will go abroad, where they will remain the greater portion of a year. While in Europe it is the purpose of E. C. Potter to devote much of his time to familiarizing himself with the steel industries and the manufacture of tin plate. The announcement that either of the retiring gentlemen has disposed of his stock in the company is unfounded. The business is a prosperous one, and they state that they have no intention of disposing of their interest. While Mr. Potter withdraws from the Executive Committee he will in all probability remain a member of the Board of Directors. Under an amendment to the by-laws of the company last July Jay C. Morse as president becomes acting chairman of the Executive Committee. It is not now known who will become the successor of E. C. Potter. It is, however, definitely stated that the change in the *personnel* of the officers will not affect the policy of the company or impede the progress of the new enterprises they now have under way.

It is proposed to convert all the single-turretted monitors into floating batteries and to supply each of them with two or more guns mounted upon disappearing carriages, of the type made by the Pneumatic Gun Carriage and Power Company. A bill has been introduced in the House with this object. The 13 monitors represent an expenditure of $7,000,000.

Herr Krupp, of Essen, Germany, is taxed on a yearly income of $1,395,000.

# Hardware.

There has not been any material change in the features of the market since our last review. The volume of business continues moderate and there is some complaint on the part of jobbing houses and manufacturers of sluggishness in trade. Merchants throughout the country are disposed to order conservatively, a condition of things which is accounted for in part by the condition of the roads, bad weather, floods, &c., and also by the fact that the trade have not as much confidence in the strength of prices as a few months ago, owing to weakness in a few leading lines and the less firm tone of the Iron market. Some of the leading jobbing houses are also shading prices, so that goods in retail parcels can be purchased from them in many lines at lower figures than from the manufacturers.

This condition of things is not entirely satisfactory, but it is expected that when the demand sets in vigorously it will have a decidedly beneficial effect on prices and that a good business will be done. Many of the manufacturers are still at work on orders taken several months ago, but some of them are accumulating stock, which in some instances they are endeavoring to dispose of, manifesting more desire to sell than for a month or two past. They are as a rule, however, holding prices firmly, and any quotable reductions are in comparatively unimportant lines. Manufacturers, in fact, as a rule are pursuing a conservative course and generally speak encouragingly of the present demand and the future outlook. In order to present the view of the market from their standpoint we give below extracts from a number of letters recently received, which will be of interest as coming from representative houses whose views are entitled to weight:

*From manufacturers of Pumps:* We have no particular complaint to make of dull trade. The month of February this year was fully equal to the month of February, 1889. We have quite a large foreign trade, which seems to be on the increase. The American demand in our line is somewhat behind the usual demand at this season of the year, but the prospect is very encouraging for the future months, as we think the stocks in the hands of dealers are very light, and the firm tone of the metal market has induced people to be about ready to place their orders. We feel quite encouraged as to the outlook for the future.

*From manufacturers of Bolts and Nuts:* For six weeks orders have been light. We are yet very busy supplying the Agricultural Impliment manufacturers with Bolts. Their orders for this season are much larger than usual. They are not buying because of present favorable contracts with us and storing the Bolts for future use, but are using them in their machines as fast as we can send them out. We believe the carriage trade is quiet, but anticipate better orders from them soon. We have had more work than we could do and are now far behind our orders. We think the outlook is bright.

*From manufacturers of Nuts and Washers:* We find business in a satisfactory condition. While not driving there is enough to keep full complements of help busy. Prices are well maintained and the outlook for the coming season is good.

*From manufacturers of Mechanics' Tools:* Our early fall and winter trade was heavier than usual. This was caused no doubt by the reported rise of Iron and other material, and dealers in anticipation of this rise ordered a large stock, which they are now obliged to work off, in consequence of which our winter trade has not been as brisk as last year, but we are looking forward to a good spring trade as the weather becomes more settled. Our prices remain about the same as last year.

*From manufacturers of Mechanics' Tools:* We are running full time on back orders which will keep us at our full capacity for the next six weeks. Orders for the past month have come in very slowly, but customers are very urgent in their calls for unfilled orders. We anticipate a prosperous year and have ordered stock accordingly.

*From manufacturers of Wagon Springs:* Our trade is a little better so far this season than last and prospects for a good, fair trade the coming season are good. Do not look for any boom. We note orders are for smaller quantities than formerly, but they come oftener, so that the volume shows an increase. It indicates to us that dealers are buying as they want and not stocking up ahead, and are going slow, waiting to see the way things will move.

*From manufacturers of Machinists' Tools:* With us business is quiet, and we anticipate only a quiet business during the year. We see no indications pointing to anything better than a moderate trade.

*From manufacturers of Bolts, Coach Screws, &c.:* We find trade fair, nothing more. The demand from consumer is regular, and shows a steady consumption. Dealers bought largely in early winter and seem to be well stocked up. Prices are weak, as Iron is weaker; still the decline in Manufactured Iron does not seem to be more than $1 per ton. We think the prospect for the season's business is for a fair, steady demand.

*From manufacturers of Locks and Builders' Hardware:* Business with us has been very satisfactory for some months past and so continues. We do not see any present indications of dullness.

*From manufacturers of Carriagemakers' Hardware:* At time of writing we are fairly busy, but not rushing, and we expect a fair season's trade. Prices, so far as we know (with few exceptions), have been firm, and we think will remain so—that is, in our line of production.

*From manufacturers of Silver Plated-Ware:* Business with us is much better than last year, the increase up to March 1 being about 30 per cent. A portion of this increase is caused by better facilities for selling goods, but upon a moderate estimate the legitimate increase is not less than 10 per cent. Prices are about the same as in 1889, except in articles where the material is largely steel. On such goods there has been a slight advance. Although business is somewhat affected by floods and unseasonable weather, we consider the prospect for 1890 excellent.

*From manufacturers of Ice Cream Freezers:* We find the condition of our business entirely satisfactory with the exception of the scarcity of ice in some sections of the country, which, in all probability, will curtail the sale of all ice goods, Ice Cream Freezers and Refrigerators especially. We are confident that if it were not for this condition of affairs our sales would be very much larger this year than in the past, but even under the present circumstances our sales are larger than last year and we are disposed to be satisfied with them. Our prices are the same as last season, not lower in any case, and we find no trouble whatever in selling our goods at same prices we obtained last season. In our general foundry department we are enjoying a larger business than heretofore and there are no indications of dullness, and prices remain the same as last season, notwithstanding the slight advance in the cos of the raw material. Summed up in a very few words, we regard the outlook of our business to be as promising as one year ago, and we expect to do as much or more business than ever before.

*From manufacturers of Tinware and Specialties:* Although business so far this year has scarcely come up to the expectation of the prosperity we had anticipated, nevertheless we have no reason to complain. But we also have heard from many of our friends of the dullness in business interests generally. It seems impossible to forecast the future, although we are inclined to think that the past warm winter will prove rather a detriment than otherwise to this spring's business.

*From manufacturers of Bolts, Nuts, &c.:* Trade is very good, and our prices are fully maintained without any difficulty, the fact being that while we hear of dullness in trade and talk of lower prices for Iron, we are very full of orders, which continue to come in as fast as we can take care of them, without making any concession whatever in our prices or terms.

*From manufacturers of Edge Tools:* We have no cause to complain of trade or lack of orders so far, though many of our customers have been ordering in smaller quantities and oftener, thus keeping us very busy in filling orders. Our sales up to the time of writing have been considerably in excess of last year, which is very gratifying to us. Our factory has been running the same number of hours each week, the goods made going into stock when not ordered. Our orders are usually filled promptly from our large stock in the warehouse which we carry on hand and consequently we have no great amount of orders ahead.

*From manufacturers of Wrenches:* The condition of business as we find it is satisfactory, but so many of our customers sent in their orders previous to January 1, fearing an advance at that time, that we cannot compare this year with an ordinary year. Many, or nearly all, bought goods in November and December that they would not usually buy till February or March, and whether they would buy as many now as they did buy then is hard to tell. From the tone of the Iron market for the past 60 days we think that some bought more than they would now at same price.

*From manufacturers of Tackle Blocks:* We find by comparing the condition of our business for the first part of 1890 with that of the same time last year that the present showing is a little more satisfactory. We also notice an improvement in the number of orders received by mail. From what information we have we are looking forward for a satisfactory trade during the coming season.

*From manufacturers of Scythe Stones, &c.:* While buyers have been somewhat slow in placing orders for future delivery our business shows an increase over that of last year, with collections good and prices fairly well maintained. We are anticipating a brisk spring trade and have been obliged already to withdraw quotations on some of our most prominent brands, though using our best endeavors to fill orders promptly.

## Wire Nails.

In accordance with the agreement reached by the principal mills the stoppage for two or three weeks has gone into effect, as announced in our last issue. This action, while it may result in the ultimate strengthening of prices, has not yet produced that effect and some exceptionally low quotations have been made for large lots. It is evident that while Wire Nails have come into very general use and are occupying an important position in the market, with a constantly increasing consumption, the capacity of the mills is still considerably in excess of the demand. The general quotation remains $2.75 to $2.80, carload lots, at mill, with greater or less advances for smaller parcels.

## Cut Nails.

The Cut Nail market continues moderately active, and $2 to $2.05 is the usual quotation for carload lots on dock. Particularly desirable orders could be placed at a concession.

At the meeting of the Atlantic States Nail Association the Western card was adopted, so that now the same Cut Nail schedule of extras obtains throughout the whole country, and the same principle underlies it as that of the Wire Nail List. We print below the old and the new schedule side by side, so that they may be readily compared:

| | Old schedule. Oct. 22, 1889. | New schedule. March 13, 1890. |
|---|---|---|
| 60d and 50d | $0.25¢ extra. | Base. |
| 40d | .10¢ " | $0.05¢ extra. |
| 30d | .10¢ " | .10¢ " |
| 20d | .10¢ " | .15¢ " |
| 16d and 12d | Base. | .15¢ " |
| 10d | .10¢ extra. | .20¢ " |
| 8d, 9d | .25¢ " | .25¢ " |
| 6d, 7d | .40¢ " | .40¢ " |
| 4d, 5d | .60¢ " | .60¢ " |
| 3d | 1.60 " | 1.00 " |
| 3d fine, and 2d | 1.50 " | 1.50 " |
| 2d fine | 2.00 " | 2.00 " |

The card on Slating, Coopers', Tobacco, Flooring, Box, Finishing, Fine Finishing, Barrel and Roofing and Clinch Nails remains the same.

## Miscellaneous Prices.

Store Barrels of Indurated Fibreware have been on the market for some time, but owing to the excessive expense these have found their way only among the best fancy grocery stores. To meet the demands for a Store Barrel at a price which will allow of their being generally used, Cordley & Hayes, of New York, as general agents for the manufacturers, are now offering a line of Barrels made in the same way as the regular Indurated Fibre goods, seamless, but treated in a manner which, while giving the same strength as the regular goods, they do not warrant waterproof. To distinguish from the regular goods they list them as "Dry Store Barrels:"

| | | | | Each. |
|---|---|---|---|---|
| No. 1, size, | 17 | in. diam., | 30 in. deep | $4.00 |
| No. 2, " | 17 | " | 27 " | 3.60 |
| No. 3, " | 14½ | " | 30 " | 3.20 |
| No. 4, " | 14½ | " | 27 " | 3.00 |

These prices are subject to the usual trade discount of 25 per cent. Can be had either of the color of the regular Indurated-Ware or a rich vermillion shade. Covers for these are extra. The points of merit in these goods, which are referred to by the manufacturers, are that they are light, seamless, and without hoops to drop off, and will not sift.

Below we give the regular discounts announced by Jenkins Bros., 71 John street, New York, of the principal goods of which they are manufacturers. The trade will bear in mind that there is a distinctionbetween Jenkins Bros.' Valves and the Jenkins Valves in which a Jenkins disk is used. Jenkins Bros. Valves are referred to as their special pattern, containing all improvements and made of the best steam metal. The discounts are as follows:

Page.
11, Jenkins Bros.' Brass Globe, Angle and Cross Valves.....dis. 30 %
11. Jenkins Bros.' Iron Body Globe, Angle and Cross Valves.....30 %
15, Jenkins Bros.' Radiator Valves.....30 %
17, " " Check " .....30 %
19, " " Safety " .....30 %
21, " " & J. S. S. Corner Valves..30 %
22, " Automatic Air Valves.....30 %
25, J. S. S. Brass and Iron " .....30 %
27, " Radiator " .....30 %
28, Jenkins Back Pressure " .....30 %
29, " All Iron Globe " .....30 %
29, " " Gate " .....30 %
34, Jenkins Brass Gate Valves.....55 %
34, " Iron " .....55 %
34, " Hose End " .....55 %
35, " Sliding Stem and Lever Gate Valves, Brass.....55 %
35, Jenkins Sliding Stem and Lever Gate Valves, Iron.....55 %
36, Jenkins Wood Wheel Gate Valves.....40 %
37, Burnham Swing Check Valves.....40 %
38, Jenkins Gauge Cocks.....45 %

A change in the prices of Spring Balances has been made by the manufacturers. It is announced by John Chatillon & Sons, 85, 87 and 89 Cliff street, New York, under date March 15, who revoke previous quotations and quote light Spring Balances at the following net prices:

| | Per dozen. |
|---|---|
| No. 2000 | $0.80 |
| " 20 | .95 |
| " 30 | 1.75 |

The following discounts are also announced:

| | Discount. |
|---|---|
| All other Light Balances | 40 % |
| Class A | 40 % |
| " A1 | 40 % |
| " A2 | 40 % |
| " C | 50&10 % |

No change has been made in other classes.

Champion Tool and Handle Works, Evart, Mich., issue a catalogue of 20 pages describing their Champion Lumbering Tools. Illustrations are given of a variety of Peaveys, Cant Hooks, Grapples, Pike Hoes, Skidding Tongs, &c., with descriptive matter in regard to the special points which are made concerning them. The company refer to their experience of 15 years in the center of the greatest pineries of the world as having been valuable in teaching them the exact wants of practical lumbermen in the line of lumbering implements. They make only one grade of tools, to the quality of which they especially refer. The following is their price-list, which is subject to a discount of 33⅓ per cent.:

No. 1, Patent Wrought Socket Peavey, per doz.....$28.00
No. 2, Solid Socket Peavey, per doz ..... 24.00
No. 3, Split Socket Peavey, per doz..... 24.00
No. 4, Cant Hooks, complete, wrought-iron clasps, per doz..... 24.00
No. 5, Cant Hook, complete, malleable-iron clasps, per doz..... 21.00
No 6, Mid Cant Hook, complete, per doz.. 24.00
No. 7, Excelsior Cant Hook, complete, per doz..... 18.00
No 7, Timber Grapple or Lug Hook, per doz ..... 28.00
No. 8, Hand Spikes, complete, with 6 ft. select rock maple handles, per doz ... 21.00
With 6½ ft. select rock maple handles, per doz..... 22.50
With 7 ft. select rock maple handles, per doz ..... 24.00
No. 9, Pike Pole, with pipe and hook:

| Length, ft. | 12 | 14 | 16 | 18 | 20 |
|---|---|---|---|---|---|
| Per doz. | $15 | $16 | $18 | $21 | $26 |

No. 10, Pike Poles, with pike only:

| Length, ft. | 12 | 14 | 16 | 18 | 20 |
|---|---|---|---|---|---|
| Per doz. | $13.25 | $14.25 | $16.25 | $19.25 | $24.25 |

No. 11, Batteau or Setting Poles, with pike at each end:

| Length, ft. | 12 | 14 | 16 |
|---|---|---|---|
| Per dozen | $18.00 | $19.50 | $21.00 |

No. 12, Swamp Hook. 7-9 inch square or octagon hammered crucible steel, round upset points, grab hooks and rings of best Swedes iron, per doz. .. ..... .....$24.00
Flat Steel, size ⅝ x 1¼ inch, per doz. . 22.00
No. 13, Loading Hooks, ¾-inch hammered crucible steel, with round upset points, Swedes iron rings, per doz..... 13.00
No. 14, Rollway Hooks, 1 inch square or octagon crucible steel, with round upset points, Swedes iron grab hook and rings, per doz..... 27.00
No. 15, Champion Skidding Tongs, octagon, ⅛-inch steel, with round upset points, opens 32 inches, weight 27 pounds per pair, per doz. ..... 72.00
No. 16, Square, 1-inch steel, with upset points, opens 32 inches, weight 25 pounds per pair, per doz. ..... 72.00
No. 17, Flat, ⅝ x 1½ inch steel, with upset points, opens 32 inches, weight 25 pounds per pair, per doz..... 72.00
No. 18, Flat, ⅝ x 1¼ inch steel, chisel-shaped points, opens 32 inches, weight 24 pounds per pair, per doz..... 60.00
No. 19, Champion Loading Blocks, all iron except ⅝ x 3 inch steel bolts; sheaves 5½ x 1½ inches; wrought-iron frame, 8 x 6 inches; swivel hook of best Swedes iron; weight 15 pounds, per doz . .... 27.00

The Steel Edge Stamping and Retinning Company, 149 Congress street, Boston, Mass., will soon issue a new catalogue showing the varied line of goods of their manufacture. The following are their net prices on Steel Edge Dust Pans:

| | | |
|---|---|---|
| No. 1 | per dozen, | $1 75 |
| No. 2 | " | 2.50 |
| No. 3 | " | 3.00 |
| No. 4 | " | 9.00 |

## The Early Manufacture of Saws in this Country.

There are probably but one or two men now living who are familiar with the history of the manufacture of Saws in this country. One of these is Emanuel Andrews, of E. Andrews & Son, Williamsport, Pa., who has in his possession the first Sawmaker's anvil brought to America. It has been used and owned by an Andrews for more than 80 years, and was brought from London by William Andrews, an uncle of the present owner, in 1819. Emanuel Andrews came to this country with his father, Benjamin Andrews, in 1833, and located in New York City, where he conducted a shop for repairing Saws. About this time R. Hoe & Co., Printing Press manufacturers, conceived the idea of making Saws, but as there were no skilled mechanics in that branch of trade in this country they were compelled to go to England and contract with men to come over. In this way the services of John Wheatman, Henry Pearson, Joseph Gill, Alexander Richardson, Joseph Crooks and George Stead were secured. The repair shop of Benjamin Andrews was a sort of rendezvous for the six English Sawmakers employed by R. Hoe & Co., and Emanuel Andrews thereby became intimately acquainted with the original Sawmakers of the United States. We are indebted to him for most of the information we have received in regard to the early history of Saw-making in this country. The old firm of Welch & Griffiths, of Boston, started a repair shop one year before Hoe & Co. commenced to make Saws.

R. Hoe & Co.'s shop, the first factory of Saws here, was in the rear of 29 and 31 Gold street, where it continued until it was destroyed by fire. After that a water-power site was selected in New Jersey and a new shop was used for a short time. The saw works were finally located at Sheriff and Broome streets, where they have been ever since.

John Wheatman, the first foreman for R. Hoe & Co., returned to Sheffield, England, about the year 1840. He established on his return to that country the successful and well-known firm of Wheatman & Smith, which is still in existence. He introduced in England the first Saw-grinding machines, which were a copy of those invented by Col. R. M. Hoe, and in doing this had to fight down the opposition of the trades unions. His life was threatened and his machines blown up by powder. His trial was the foundation of Charles Reade's character of Henry Little in "Put Yourself in His Place." The love affairs in that story, we are advised, are pure fiction, but much of it relating to efforts to work his Saw-grinding machine is true, as is also the account of his trip to America and his attempt to sell some improvements on the Hoe machine.

It may be interesting to note something of the subsequent career of the Saw-makers who were brought to this country in 1833. The following points are given us: The death of Henry Pearson occurred in Oswego, N. Y., November 3, 1887. Mr. Pearson left the employ of Hoe & Co. in 1839 at the completion of his contract with that firm, and removed to Syracuse, N. Y., where he engaged in business for himself. He will also be remembered as having organized the first cricket team that ever played in this country. John Wheatman returned to England at the end of his contract, where he died after amassing a large fortune. Joseph Gill remained in New York until his death, which was caused by consumption. Alexander Richardson quit the business of Saw-making and removed to Boston, where he became a broker and died wealthy. Joseph Crooks also died of consumption in New York. George Stead went to Baltimore where he engaged in manufacturing Saws. In 1850 he went to California during the great gold excitement, where he was living at last advices.

The second manufacturing Saw factory in New York was that of Worrall & Co. It was situated on Elm street, where it still continues. The first foreman of that establishment was W. I. T. G. Groves, another Englishman from Sheffield. The first 60-inch Circular Saw was made by R. Hoe & Co., in the year 1849. At that time there were not more than six men employed in the United States working on Saws above 48 inches in diameter.

From such a small beginning the industry of manufacturing Saws has greatly developed, until it has assumed its present great magnitude. There are to-day in the United States between 40 and 50 Saw-making and repairing establishments, employing in the aggregate nearly 5000 men.

## Items.

The trade will observe the announcement on page 55 in which Haydock & Bissell, 12 Murray stteet and 15 Park place, New York, give notice that on Tuesday, March 25, at their auction rooms there will be a large and peremptory sale of Hardware, Tinned Ware, House Furnishing Goods, Blue and White Ware, Children's Carriages, &c. On the same day, by order of Ernest G. Stedman, assignee of Sise, Gibson & Co., 1500 pairs of Derby and American Lever Skates, ladies' and gentlemen's sizes, in case lots, will also be put up at auction, as well as a large and desirable assortment of Agate Ware—Tea and Coffee Pots, Boilers and Kettles, Dish and Sauce Pans, &c.—by order of Lalance & Grosjean Mfg. Company. It is also announced that on Thursday and Friday, March 27 and 28, a trade sale of Table and Pocket Cutlery, Carvers, Scissors, Plated Flat Ware, &c., will take place. The variety and excellence of the assortments offered at these sales will attract the attention of the trade.

Markley, Alling & Co., Chicago, Ill., issue a 32-page catalogue devoted to Fishing Tackle—Rods, Reels, Flies, Hooks, Spoons, Trolling Baits, Floats, Seines, &c. An interesting variety of these goods is shown. They also issue another catalogue relating especially to Farming Tools, and showing also a variety of new and seasonable goods, including Sheep Shears, Clippers, Pruning Tools, Drain Tools, Shovels and Spades, Clevises, Hog Rings and Ringers, Screen Doors, Spring Hinges, Wire Cloth, &c.

Among the announcements on page 56 will be observed one signed "Ohio," in which a manufacturing concern in Ohio state that they desire the services of a man competent to take charge of the department for electro-bronzing on iron and nickel-plating on brass. From the character of the house thus advertising we would say that this opportunity is deserving the attention of any who are qualified to fill the place.

Bryan Mfg. Company, Bryan, Ohio, issue a circular relating to new Wheels, which they are using in Fay's Combined Wheelbarrow Nos. 6 and 7. These Wheels are of steel with hot riveting spokes.

As announced among the special notices on page 56, the Star Chain Works, Trenton, N. J., are offered at private sale. As an old established concern now in full operation this opportunity will be deserving the attention of those desirous of engaging in such an enterprise. The trade connections and the favorable location of the factory are especially alluded to, and the intimation made that with a moderate outlay the capacity of the works can be doubled.

Howard B. Peak has opened a salesroom at 106 Houston street, Fort Worth, Texas, where a stock is carried of the following manufacturers, for whom he is agent:

Thomas Scantlin & Son, Evansville, Ind.
C. Sidney Shepard & Co., Chicago, Ill.
The F. F. Adams Co., Erie, Pa.
The Schneider & Trenkamp Company, Cleveland, Ohio.
The Forsyth Scale Company, Youngstown, Ohio.
Macneale & Urban Safe and Lock Works, Cincinnati, Ohio.
H. W. Peak & Co., 16 Worth street, New York.

Besides his own traveling, Mr. Peak has two men who represent him on the road, so that he is thus in a favorable position to market the above lines. He refers to trade throughout the State as being in excellent shape.

The Billings & Spencer Company, Hartford, Conn., issue circulars relating to Drop Forged Steel Eye Bolts, Billings' Patent Beam Caliper and Billings' Ball Pein Machinists' Hammers, of which we gave a description in a recent issue.

"Ten Years in Buffalo" is the title of a carefully compiled and effective pamphlet showing the developement of the city during the past decade. It comes to us with the imprint of McKinnon Dash and Hardware Company, Black Rock, Buffalo.

Samson Cordage Works, 164 High street, Boston, Mass., issue a neat sample card showing some of their lines of Solid Braided Sash Cord, and call attention in the accompanying circular to its durability and other excellencies and the position it occupies in the trade and in the estimation of architects.

L. F. Kleeman & Co., Kansas City, Mo., issue a catalogue calling attention to the various goods manufactured by them. It covers a varied line of Wire and Iron Work, Brass Store Fixtures, &c. An interesting line of Wire Goods is represented in it.

A catalogue of staple and miscellaneous Wooden and Willow Ware, Cordage, Paper Bags, Wrapping Paper, Brushes, Brooms, Glassware, &c., is issued with the imprint of Geo. T. Webb Woodenware Company, Kansas City, Mo. Nearly 200 pages are devoted to these lines, of which appropriate illustrations are given. They also issue an attractive catalogue of Baby Carriages, Velocipedes, Tricycles, Iron Wagons, Croquet Sets, &c. It is effectively printed in blue

Ball Bros. Glass Mfg. Company, Buffalo, N. Y., have issued a special price-list relating to their interesting variety of Oil Cans, Oil Tanks, Gasoline Tanks, Wood Jacket Shipping Cans, the Perfection Oil Barrel Pump, Square Varnish Cans, Wood Jacket Butter Packages, &c. These different goods are illustrated and attention called to their construction and advantages. List prices are also given.

The Terry Mfg. Company, Horseheads, N.Y., have recently extended the foundry department of their works by a brick addition 40 feet square. New machinery has also been placed and changes to furnish increased facilities for the manufacture of their Hardware specialties have been made.

Missouri's anti-trust law was declared unconstitutional by Judge Dillon of the Circuit Court, in St. Louis, on the 11th inst. The decision rendered was in the case of the State of Missouri against the Simmons Hardware Company. This is the test case to be fought out in the courts to the end, and its progress is watched with great interest by a large number of corporations in that State and outside. If the law is not rendered inoperative completely in the lower court the respondents will appeal the case to the higher courts. Judge Dillon's is the first decision in the State on any point of the law. Last December Secretary of State Lezur wrote to the Simmons Hardware Company asking them to make an affidavit saying the corporation was not a member of any trust, monopoly or combine whose object was to destroy competition and raise prices. The company refused to reply to the first or second letter, and suit was filed in the Circuit Court asking the court to declare the charter of the company forfeited for not complying with the law. The Simmons Hardware Company filed a demurrer to the petition questioning the constitutionality of the law, and on this Judge Dillon rendered his decision, sustaining the demurrer, and thus virtually declaring the law to be unconstitutional.

Shepard Hardware Company, Buffalo, N. Y., are issuing a new circular in which there is the interesting reproduction of letters received from their customers testifying to the merits of the Lightning Freezers. These letters, many of them coming from leading houses in the trade, and given in *fac-simile*, are of interest apart from their endorsement of the well-known Freezer.

The condition of the market in Crude Rubber is having an effect on the prices of Rubber Belting, Hose, &c., which are firmer, is not quotably higher. The crop is evidently shorter and the consumption greater than in any previous year, and the fact that large blocks of Rubber are in the hands of speculators gives the market for the raw material a very strong tone. Many of the manufacturers are probably supplied with a good stock of Rubber purchased at old prices, but on this point we are not in possession of definite detailed advices. Some of the manufacturers have already advanced prices and nearly all of them are refusing to make quotations except for immediate acceptance, so that in a general way the prices of Rubber Belting, Hose, &c., may be referred to as hardening, and the manufacturers would refuse large orders at present prices. The best quality of Rubber Goods are costing more than before the advance in the crude material, for the reason that the best goods contain the most Rubber, while the lower grades contain much less and some of them comparatively little. It is, therefore, the higher quality of goods that feel the effect of the advance in Rubber the most.

Parkhurst & Wilkinson, Chicago, in a circular to their customers under date March 13, refer to the business situation as follows, with a special reference to the tone of the market in prices:

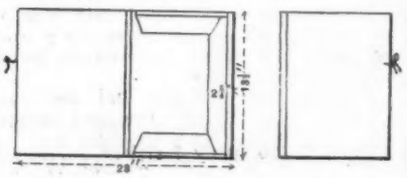
The Iron, Steel and Nail market is unsettled and weaker. Well-posted parties differ as to the probable price in the near future. The foreign markets are still so high that nothing can be imported, and it is simply a question of supply and demand in this country. We have

a well-assorted stock and can fill all ordinary orders promptly. We expect to meet market prices at all times and hope you will send us a share of your orders. We are prepared to make low figures on mill shipments.

The market for Bright Wire Goods continues steady and firm at the recent advanced prices, a condition of things which is owing largely to the wise and efficient management of the commissioner.

## Portfolio for Trade Use.

Instead of sending out descriptions of their goods in printed books or pamphlets some manufacturers, especially those whose goods call for tasty and artistic illustration, are sending out photographs or other illustrations in sheets or mounted on cardboard, and in some such way are supplying their customers with information in regard to new goods or others for which inquiry is made. The tendency toward artistic Hardware will promote the adoption of some such method, and in order to do this satisfactorily provision is sometimes made for the accommodation of such illustrative matter. In this connection the portfolio illustrated below may be of some interest.




It is suggested by a firm of English manufacturers who have adopted it in sending out to the trade their new designs, which are lithographed on loose sheets measuring 10 x 12¼ inches. These sheets are inclosed in the portfolio, which is made of strong millboard in the shape of a book cover bound in leather. On the inside of one back are three cloth flaps running round the sides and folding inward when the case is closed, keeping the sheets from sliding out. It is fastened by two pieces of black tape. The above sketch and measures will make plain its construction.

One advantage mentioned as possessed by this portfolio is that the additional sheets that are continually being sent out by manufacturers with later novelties can be placed in these cases, and so the whole set of designs of a particular maker are kept together intact, besides keeping them straight, clean and handy at all times for reference.

## Exports.

FOR LYTTLETON.

*By W. H. Crossman & Bro.*—4 packages Iron Pipe Fittings.

*By R. W. Forbes & Son.*—19 packages Hardware, 1 crate Sad Irons, 24 dozen Spade Handles, 1 case Fire Arms, 2 packages Pumps, 6 dozen Egg Beaters, 20 dozen Axes, 6 dozen Barometers, 1 box Hardware, 36 dozen Whip Handles, 4 dozen Seed Sowers, 3 dozen Grinders, 32 Drills.

*By Arkell & Douglas.*—124 pounds Iron Castings, ⅛ dozen Wringers, 4 dozen Forks, 42 dozen Axe Handles, 2 dozen Mattocks, 2½ dozen Blocks, 7 dozen Lampware, 6 dozen Shovel Handles, ¼ gross Fire Shovels, 1 dozen Braces, 20 dozen Washboards, ⅓ dozen Churns, 12 dozen Hatchets.

*By H. W. Peabody & Co.*—36 reels Barb Wire, 18 dozen Handles, 2 packages Hardware, 20 dozen Handles, 13 cases Hardware, 75,000 Skewers, 2000 pounds Wire, 4200 pounds Nails, 9 cases Hardware, 3 barrels Lampware, 24 dozen Handles, 34 packages Hardware, 2 gross Pencils, 56 dozen Handles, 3 cases Pumps, &c., 10 dozen Washboards, 76 dozen Handles, 3 cases Stones, 1500 pounds Nails, 22 packages Hardware, 1 bundle Lampware, ⅓ gross Glue, 84 dozen Handles, 1 case Pumps, 19 packages Lawn Mowers, 3 dozen Wringers, 6 packages Hardware, 6 Lawn Mowers, 2 dozen Churns, 3 cases Hardware, 15 Lawn Mowers.

PER BARK C. TOBIAS, MARCH 7, 1890, FOR MELBOURNE, AUSTRALIA.

*By Arkell & Douglas.*—165 sets Axles, 9 dozen Hoes, 6 dozen Wrenches, 24 dozen Hammers, 3 sets Dies, 30,000 Cartridges, 2000 feet Cotton Hose, ⅓ dozen Coffee Mills, 224 pounds Oil Stoves, 4200 pounds Iron Castings, 12 dozen Handles, 27 Lawn Mowers, 4½ dozen Wringers, 2 Bolt Clippers, 96 Springs, 54 sets Axles, 5740 pounds Bolts, 28,500 Bolts, 4 dozen Braces, 12 dozen Axes, 6 dozen Bench Screws, 94 pounds Iron Castings, 25 dozen Plated-Ware, 6 dozen Rakes, 6 dozen Hoes, 160 dozen Hinges, 1660 pounds Axes.

*By H. W. Peabody & Co.*—2 dozen Rakes, 2 packages Pumps, 1 dozen Carpet Sweepers, 24 dozen Enameled Ware, 2500 pounds Nails, 110 dozen Handles, 3⅓ dozen Wringers, 4 packages Hardware, 3 cases Hardware.

*By W. K. Freeman.*—990 pounds Horse Nails, 1000 pounds Hardware.

*By W. H. Crossman & Bro.*—10,000 pounds Nails, 5 dozen Chucks.

*By R. W. Forbes & Son.*—2 dozen Wringers.

*By Meriden Britannia Company.*—7 boxes Plated-Ware, 6 packages Plated-Ware.

*By J. W. Horton & Son.*—430 dozen Handles.

*By Welsh & Lea.*—33 cases Iron Bolts.

*By W. & B. Douglas.*—48 Pumps.

PER BARK ADAM W. SPIES, MARCH 10, 1890, FOR MELBOURNE, AUSTRALIA.

*By Bissell Carpet Sweeper Company.*—15 cases Carpet Sweepers.

*By Walter A. Wood.*—24 boxes extra parts for Mowers, &c.

*By Plumb, Burdict & Barnard.*—3790 pounds Iron Bolts.

*By Dunbar, Hobart & Co.*—6440 pounds Hungarian Nails.

*By Healy & Earl.*—4 cases Wood-Working Machinery.

*By Hammacher & Delius.*—15 Stoves, 40 packages Hardware.

*By J. A. Babcock & Co.*—10 cases Plated-ware.

*By S. Guiterman.*—6 cases Hardware.

*By Gutta Percha and Rubber Mfg. Company.*—13 bales Rubber Hose, 1 box Rubber Packing.

*By W. E. Peck.*—16,600 Cartridges.

*By R. W. Cameron & Co.*—8200 pounds Axles, 2 cases Machinery.

*By H. W. Peabody & Co.*—30 cases Hardware, 748 dozen Handles.

*By Arnold, Cheney & Co.*—90 dozen Rakes.

*By R. W. Forbes & Son.*—17 packages Lampware, 12 gross Lamp Wicks, 6 dozen Meat Choppers, 1 gross Egg Beaters, 1 case Fire-Arms, 1 case Hardware, 19 dozen Bird Cages, 7 packages Hardware, 8 dozen Rakes, 1 box Hardware, 1 dozen Shotguns.

*By McLean Bros & Rigg.*—4 dozen Sinks, ⅙ dozen Grindstones, 70 dozen Locks, 72 dozen Axe Handles, 1 Screen-Holder, 5 dozen Sash Cord, 3 Tube Scrapers, 1 Anvil and Vise, 1 dozen Axes.

*By Strong & Trowbridge.*—1 dozen Meat Cutters, 14 gross Shears, 27 dozen Hammers and Wrenches, 76 dozen Rules, 7½ dozen Plated-Ware, 10 Fishing Rods, 6 dozen Handles, 15 dozen Hog Rings, 12 dozen Handles, 250 pounds Bolts, 6 dozen Hoes.

*By W. H. Crossman & Bro.*—4 dozen Axes, 9 dozen Braces, 6 dozen Hammers, 1 barrel Hardware, 6½ barrels and 1 keg Pipe Fittings, 10½ dozen Pumps, 1 box Hardware, 2 cases Hammers, 36 dozen Tools, 4 cases Forks, 40 dozen Tools, 26,000 Shot Cartridges, 10,000 Cartridge Shells, 32 dozen Handles, 20 kegs Nails, 6 dozen Wringers, 3 dozen Hardware, 4 Wringers, 2 dozen Hoes, 6 cases Hardware.

*By Welsh & Lea.*—360 dozen Handles, 110 dozen Axes, 14 dozen Saws, 84 dozen Files, 14 gross Chalk Lines, 18 dozen Wrenches, 12 dozen Broilers, 60 dozen Whipstocks, 4 dozen Meat Choppers, 36 dozen Locks, 1 case Springs, 1 dozen Wringers, 18 dozen Pulleys, 19 dozen Rivet Sets, 1½ dozen Braces, 12 dozen Wrenches, 11 dozen Pulleys, 56 dozen Sad-Iron Stands, 3 dozen Bench Screws, 36 gross Hat and Coat Hooks, 500 feet Rubber Hose, 3 dozen Bench Screws, 180 pounds Stone, 6 dozen Saw Sets, 500 feet Rubber Hose, 24 dozen Mouse Traps, 12 dozen Hammers, 6 dozen Carpet Sweepers, 14 dozen Forks, 12 dozen Knobs, 6 gross Sad-Iron Stands, 216 gross Tacks, 4 gross Picture Nails, 3 dozen Churns, 12 dozen Pruning Shears, 6 gross Lemon Squeezers, 5½ dozen Meat Choppers, 3½ dozen Miter Boxes, ¼ dozen Carpet Sweepers.

PER BARK EDWARD CUSHING, MARCH 8, 1890, FOR PORT NATAL, SOUTH AFRICA.

*By Oetrichs & Co.*—12 dozen Hatchets, 9000 pounds Nails.

*By Woodhouse & Stortz.*—5 dozen Axes, 264 pounds Axle Grease.

*By R. W. Forbes & Son.*—21 dozen Axes, 5 dozen Hoes, 17 dozen Axes, 5 dozen Hoes, 3 packages Agricultural Implements, 1 package Forks, 4 kegs Nails, 12½ dozen Axe Handles.

*By Corner Bros. & Co.*—53 cases Hardware, 18 cases Agricultural Implements, 352 cases Hardware.

*By W. H. Crossman & Bro.*—92 dozen Hard ware, 1 dozen Scales, 3 dozen Stove Trucks, 10 dozen Wheelbarrows and Parts, 243 dozen Hardware, 10 reams Sandpaper, 10 cases Hardware, 14 cases Plow Parts.

*By Coombs, Crosby & Eddy.*—5 dozen Axes, 42,000 pounds Barb Wire, 10 dozen Axes, 800 pounds Cut Nails, 3 dozen Hand Screws, 17 dozen Hatchets, 13 dozen Hardware, 4 Vises, 30 dozen Hatchets, 10 Carts, 1 Wagon, 52,500 pounds Barb Wire, 256 Plows, 360 dozen Handles, 2 dozen Churns, 46 dozen Tools, 24 Plows, 18 Trucks.

PER BARK AGATE, MARCH 14, 1890, FOR CAPE TOWN, SOUTH AFRICA.

*By Arkell & Douglas.*—10 dozen Handles, 8 dozen Traps, 3 Hand Carts, 30 dozen Axle Grease.

*By M. Berliner.*—6 Carts.

*By H. W. Peabody & Co.*—480 packages Harvesting Machinery, 500 Handles.

*By Corner Bros. & Co.*—500 Fuses.

*By Strong & Trowbidge.*—18 dozen Axes, 48 dozen Handles, 1000 Handles, 2 Freezers.

*By W. H. Crossman & Bro.*—1 case Hardware.

*By Coombs, Crosby & Eddy.*—7½ gross Axle Grease, 2½ dozen Churns, 3 dozen Hatchets, 4 dozen Planes, ½ dozen Store Trucks, 4 Churns, 42 dozen Handles, 7 dozen Handles

# REVIEW OF THE WHOLESALE MARKET IN PAINTS AND OILS.

*It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.*

## Paints and Colors.

Trade has been rather freer this week than last, yet the movement of goods into the channels of final distribution has in no case exceeded ordinary proportions. That is to say, the volume of business has been merely routine and not of a character that would call for special remarks, although undoubtedly more satisfactory to manufacturer, importer and jobber than for some little time past. In any event evidence is wanting of anything in the movement of goods calculated to change the general temper of the market or which would suggest any immediate radical change in values. Taken as a whole, prices for standard quality of pigments and colors are firm, and on the inferior qualities there is no change outside of the ordinary fluctuation. Proprietary goods, more particularly Ready-Mixed Paints of the better class, seem to be faring quite as well as the more staple commodities as regards both current sales and steadiness of prices.

*White Lead.*—No change has taken place in the market for this pigment, save that the movement of supplies has increased somewhat on both local and out-of-town orders. The general position is practically the same as noted last week, and prices are quite firm for both pure Lead and the best of the cheaper sorts. Jobbers state that sales of the latter continue to average larger than those of a year ago, and the cheapest sorts are taken to a very good extent also, for special uses, such as curtain manufacture, &c. The movement of the pure article, however, appears to be fully up to the average.

*Red Lead and Litharge.*—The usual movement for the season is reported by manufacturers and the market remains firm, with prices the same as quoted for some time past.

*Zincs.*—American Oxide has been moving very steadily, with deliveries on contracts involving considerable quantities and the spot sales somewhat larger than those of last week. Prices are unchanged and firm. Foreign brands remain the same as heretofore, with about the usual sales making.

*Colors.*—Dry Colors in general are holding their own in price remarkably well

and the volume of business in the leading descriptions is fully up to the average for the season. On Colors in Oil practically the same is to be remarked. While not quoted any higher, the market for Paris Green is decidedly firmer, being influenced more or less by the high cost of arsenic and moderate supply of the same.

*Miscellaneous.*—Chalk is coming forward in moderate quantities and the supply is likely to continue as long as the labor troubles in Europe exist. Prices are very firm and higher. Some manufacturers of Whiting have withdrawn quotations, owing to the condition of the Chalk market, but others sell at the old figures. Paris White is without change in price and rather quiet.

### Animal and Vegetable Oils.

The changes in prices the past week have been few in number, with rise of 1¢ on City Linseed product the most noteworthy. For other goods previous rates are maintained with greater or less display of firmness on the part of sellers, and the general situation looks favorable. Crude materials in general keep high, the home and export movement is generally in line with what is customary at this season, and, with few exceptions, prices are not high enough to check the consumption any. In point of fact the distribution of Cotton Seed, Lard, Menhaden and some Oils of lesser importance has been remarkably large thus far this year.

*Linseed Oil.*—City crushers have advanced their prices to 62¢ for American and 64¢ for Calcutta Seed Raw Oil. Boiled is 1¢ higher also. There has been no further change in Western prices. The receipts here of out-of-town brands continue moderate. These cost nearly if not quite as much in this market as city brands, 60¢ being now a close price. Substitutes and adulterants are, it is stated, being used in larger quantities by unscrupulous dealers.

*Lard Oil.*—Prime quality Oil has been quite firm at last week's advance, in the absence of any material change in the market for raw material. The demand has been fairly active and the tone of the market continues decidedly firm.

*Cotton-Seed Oil.*—Sales of crude product have fallen off somewhat, but there is still a very good business and prices remain steady. The refined Oils have not been taken in very extensive quantities for either export or home account, but the aggregate movement is good and prime qualities bring previously quoted prices.

*Menhaden Oils.*—A reduction in ocean freight rates has stimulated export interest in crude Oil somewhat, but no business has yet transpired that materially affects prices. The manufactured products are steady at the prices that have ruled for some time past and meeting with very fair sale.

*Sperm and Whale Oils.*—The market for crude Oils has undergone no change, and the manufactured Oils have moved in about the usual way at old prices. A feature of some interest has been the arrival of about 600 cases Japan crude Whale Oil, all of which was purchased by an Eastern manufacturer.

*Cocoanut Oils.*—Ceylon has met with rather better sale on the spot, one lot of 50 tons having been sold at 5½¢. Cochin is unchanged and slow.

*Palm Oil.*—Sales have continued fairly large, and the market remains firm, with last week's prices ruling.

*Olive Oil.*—The demand at present is only fair, but cost is still high in the foreign market and prices remain firm here.

---

Mexico is about to have a parcels post arranged by treaty with Great Britain, to aid in developing direct commercial intercourse.

### Causes of Fire Graphically Presented.

We have received through a local agent of fire insurance companies a card upon which is presented, by means of colored squares, a graphic representation of the proportion of dwelling-house fires in the United States due to various causes. In all there are about 36 squares on the sheet, the different areas of which indicate the number of fires due to the several causes. The smallest block is about $\frac{1}{16}$ inch square, marked "Defective Lighting Apparatus," the fewest number of fires being apparently originated in that way. The squares, in an ascending series, gradually increase in size, the first noticeable change of area being the square labeled "Ignition of Grease and Oils," which is about ¼ inch on a side. Seven other causes are assigned about the same space, including such various origins as tramps, thawing water pipes and locomotive sparks. Cigar stumps are apparently responsible for many fires, as the diagram they relate to is over ½ inch square. From there the diagrams gradually increase in size, being labeled successively "Hot Ashes, Fire Crackers, Stove Pipes, Lightning, Open Fireplaces and Grates and Fireworks," besides several others. "Lamp Accidents" is a square nearly ¾ inch on a side, and a similar diagram is entitled "Gas Jets." Explosions of lamps and lanterns, sparks and matches have squares over 1 inch each way. The next larger diagram, 1½ inches on a side, represents the number of dwelling houses burned from forest and prairie fires. We think this item will be a surprise to most people, for the terrible results of prairie and forest fires is not realized by those who live in cities and in the Eastern States. Incendiarism is responsible for the same number of conflagrations as forests and prairies, and is the only cause that may be said to be entirely without reason or excuse. We come now to the chief of all dangers, defective flues, its square being over 2 inches on a side. We do not know how accurate this last item may be, because it is a common practice where a building is entirely destroyed to attribute the origin of the fire to a defective flue. The defective flue never has any champions, and any amount of responsibility and obloquy may be thrown at it safely. The diagrams are founded upon reports covering 7300 fires extending over a period of two years, and their teaching, as pointed out, is that every fire cause they note, is but another term for poor construction, carelessness or crime.

A second circular, received through the same source as the above, shows graphically the percentages of incendiary fires in 45 classes of property, the diagrams being based upon over 17,000 fires, the causes of which have been specifically reported. The classes of property are represented by small circles about ¾ inch in diameter, red colored segments representing incendiarism, the remaining white segment being other causes. Tobacco barns suffer more than any other buildings, as out of the total number of buildings that took fire, more than 85 per cent. were burned by incendiaries. Country stores follow with a percentage of 67, and jails and livery stables are practically the same. The fires in mills, lumber yards, warehouses and carriage factories are about equally divided between incendiarism and other causes. Nearly one-half of the ice houses are maliciously set fire to, while 30 to 40 per cent. of the fires in barns, theatres, railroad bridges, school houses, planing mills, hotels, distilleries, grocery stores, saloons and saw mills have an incendiary origin. There are nearly 27 per cent. of church fires due to this inexcusable cause, while paper mills, haystacks, railroad stations, breweries, hardware stores, iron and steel works run from 20 to 30 per cent. The percentage reduces further in the case of residences, several sorts of stores and factories, the lowest limit being reached with dwelling houses, only 14.3 per cent. of the fires in them being due to incendiaries.

### The New Tariff Bill.

The principal provisions of the new tariff bill agreed upon by the Ways and Means Committee are as follows:

Pig iron pays the existing duty of $\frac{3}{10}$ cent per pound.

On round iron not less than ¾ inch in diameter, the rate is reduced from 1 cent to $\frac{9}{10}$ cent.

The same reduction is made on round iron less than ¾ inch and not less than $\frac{7}{16}$, from $1\frac{1}{10}$ cents to 1 cent per pound.

The duties on other round iron are not changed.

The duties on boiler iron are reduced the fraction of a cent.

Wire rods remain at about the old rates, but wire is reduced ¼ cent per pound on each classification, except that smaller than No. 26, which remains at 3 cents.

Iron or steel wire coated with zinc or tin or any other metal is to pay ¼ cent per pound in addition to the other duties to which it is subject.

Manufactures of iron and steel are given a separate classification, and anchors and parts thereof and wrought iron for ships and forgings are charged 1½ cents per pound.

Anvils are charged 2½ cents.

Boiler tubes 2½ cents.

Card clothing of tempered steel, 45 cents per foot, and other card clothing 25 cents per foot, and castings of malleable iron, 1½ cents per pound.

Specific are substituted for ad valorem duties on cutlery, but the duties are fixed upon the different values of the articles.

The duties on copper are reduced one-half throughout.

Iron ore is still charged 75 cents per ton; and a provision is added that "in levying and collecting the duty on iron ore no deduction shall be made from the weight of the ore on account of moisture which may be chemically or physically combined therewith."

The lead ore provision reads as follows: Lead ore and lead dross, 1½ cents per pound; provided that silver ore containing lead shall pay a duty of 1½ cents per pound on the lead contained therein, according to sample and assay at the port of entry.

Nickel is reduced from 15 cents per pound to 2 cents per pound.

Zinc is increased to 1¼ cents in blocks or pigs, and remains at 2½ cents in sheets.

Wood screws are charged from 5 to 14 cents per pound, according to length.

Muskets and shot guns remain at 25 and 35 per cent., as in the existing tariff.

---

Joseph Eckman, one of the best known ironmasters in Pennsylvania, and for nearly 40 years manager of the Grubb furnaces at Mount Hope and Columbia, died in Lancaster last Friday, aged 76 years.

---

A member of the firm of Carnegie, Brothers & Co., Limited, is quoted as authority for the statement that a lot of Southern Bessemer pig iron purchased has been rejected because it is too high in phosphorus and sulphur.

---

The iron superstructure of a double-track railroad bridge over the Ohio River at Chaterawha for the extension of the Norfolk and Western Railroad will be constructed by the Edgmore Bridge Company, the whole to be built at a cost of $1,400,000.

# HARDWARE COMPETITIONS.

WE HEREBY ANNOUNCE a series of competitions relating to the Hardware business and especially the keeping track of prices in connection with it. These competitions are intended to call out information as to the best methods of taking care of the many price-lists, circulars and miscellaneous printed matter relating to the diversified lines handled by Hardwaremen, with descriptions of the ways in which record can be systematically kept of quotations made by parties from whom goods are purchased. It is desirable also to have descriptions of systems of marking prices of goods for salesmen's use, and in short to cover **the whole field of the store or office management of buying and selling prices.** In this connection a competition is also announced for essays relating to the manner in which *The Iron Age* should be used in a Hardware store. That these important subjects may be fully and satisfactorily discussed five separate competitons are announced.

All contributions sent in for these prizes shall be the property of *The Iron Age*, with the right to publish them in such way as may be deemed advisable.

*COMPETITION NO. 1.*

## The Care of Price-Lists.

The object of this competition is to secure descriptions of simple and practical methods of keeping for convenient reference catalogues, price-lists, circulars and other printed matter relating to goods handled by the trade. Explanation should be given of the arrangement of shelving, cabinets, scrap-books, portfolios or other receptacles, with such drawings or sketches as may be needed to make the arrangement plain.

If in this connection there is a classification of catalogues or of goods it should be explained in full.

Information should be given in regard to the methods of indexing, or other means used to promote convenient reference to catalogues, price-lists, &c.

First Prize.....$100
Second Prize ..... 50

This competition will remain open until the close of business May 31, 1890.

Contributions are to be addressed to *The Iron Age*, 66 and 68 Duane street, New York, marked "Prize Competition No. 1."

*COMPETITION NO. 2.*

## The Cost of Goods.

The object of this competition is to secure descriptions of methods for keeping quotations so as to keep the buyer advised in regard to the prices made to him by parties from whom he purchases. The way in which this is done should be clearly explained in detail, whether it be by marking prices in catalogues, &c., recording them in a price-book, or by special cards or other devices for this purpose. If a price-book is used its arrangement should be shown by sample pages with prices marked on them, and any other method should be made plain by suitable illustrations.

First Prize.....$100
Second Prize. ..... 50

This competition will remain open until the close of business June 30, 1890.

Contributions are to be addressed to *The Iron Age*, 66 and 68 Duane street, New York, marked "Prize Competition No. 2."

*COMPETITION NO. 3.*

## Marking Prices.

The object of this competition is to secure descriptions of approved methods of marking prices for salesmen's use.

If one or more ciphers are used their method of use should be explained, with examples of the markings of different goods.

If price-cards are used their arrangement, size, method of use, location in store, &c., should be explained.

Attention should be given to the different ways in which prices of different kinds of goods are marked, such as shelf goods, heavy hardware, metals, cutlery, &c.

First Prize.....$100
Second Prize..... 50

This competition will remain open until the close of business July 31, 1890.

Contributions should be addressed to *The Iron Age*, 66 and 68 Duane street, New York, marked "Prize Competition No. 3."

*COMPETITION NO. 4.*

## Good Buying.

The object of this competition is to secure papers in regard to buying. It is intended to call out information as to how advantageous prices may be obtained, the system adopted in regard to ordering goods, and such practical suggestions in regard to the matter as will represent the principles to be followed by careful and successful buyers. In this connection an explanation should be given of the method by which the buyer is advised in regard to the goods required, whether by the use of want-book, stock-book, the records of business of the past year or otherwise. Samples should also be given of any blanks used.

First Prize.....$100
Second Prize ..... 50

This competition will remain open until the close of business August 30, 1890.

Contributions should be addressed to *The Iron Age*, 66 and 68 Duane street, New York, marked "Prize Competition No. 4."

*COMPETITION NO. 5.*

## The Use of The Iron Age in Hardware Stores.

The object of this competition is to secure essays relating to the use to be made of *The Iron Age* in connection with the Hardware business, whether in its advertising or reading columns. It is desired that competitors express their views on subject in a practical and businesslike way.

First Prize.....$100
Second Prize..... 50

This competition will remain open until the close of business September 30, 1890.

Contributions should be addressed to *The Iron Age*, 68 and 68 Duane Street, New York, marked "Prize Competition No. 5."

## Improved Pedal Valve.

Some months ago we illustrated in *The Iron Age* the Pedal Radiator Valve manufactured by the Utica Steam Gauge Company, Utica, N. Y. The manufacturers have lately made some important improvements in this device, and the cuts herewith presented, Figs. 1 and 2, are broken views of the valve, showing it open and closed. The principal feature of this radiator valve is that it can be

*Fig. 1.—Broken View of Valve, Closed.*

opened and closed with the foot. In Fig. 1 the valve is shown closed, while by pressing the lever down with the foot to the position shown in Fig. 2 the valve is opened. The valve is closed by pressing the knob shown, which releases the lever. The manufacturers point out the fact that this valve cannot be partially opened, but must be either closed entirely or wide open. It is a common mistake in the use of radiators to attempt to regulate the heating by partially shutting the valve, and the only result is that the radiator fills with water. The principal change in the new

*Fig. 2.—Broken View of Valve, Open.*

form of the Pedal valve is that the seat instead of being horizontal and at the bottom of the valve body is in a vertical position, as shown in the cuts, which being so there is less danger of dirt collecting in the seat and preventing the closing of the valve. As at present made the valve shuts with the pressure instead of against it, so the higher the pressure the tighter it will close. The other advantages in the valve relate to the simplifying of the working mechanism.

An expert in a report written in the forties on a mining property in the South, wishing to illustrate the vastness of the deposits, wrote in substance: "Even if a cyclopian furnace, making 10,000 tons of pig iron in a year, were to run for generations, it could not exhaust the ore." The "cyclopian" furnace of to-day makes 10,000 tons in one month.

## The Ice King Refrigerator.

In the accompanying engraving we show a general view of the Ice King hardwood refrigerator which is being put upon the market by the Northern Refrigerator Company, of Grand Rapids, Mich. The ice is kept in the upper corner of the lower portion of the refrigerator and is put in through an opening in the top which is closed by means of a sliding cover. The construction is such that the cold air circulates in all parts,

*The Ice King Refrigerator.*

but is not wasted by the opening of the doors. The two lower compartments of the cabinet portion of the refrigerator are lined with metal and are made nearly airtight for the purpose, it is claimed, of keeping bread and cake moist. The smaller part may be used for keeping cheese. The panels of the upper compartment are made of wire gauze. It is provided with shelves for pastry and such other food as it is desirable to keep away from insects. The front of the refrigerator is finished in imitation of drawers and doors for ornamental purposes. It can be furnished with or without water-cooler as may be preferred.

## Alexis Washstand.

The Cincinnati Stamping Company, of Cincinnati, Ohio, have brought out a new form of washstand which they are offering the trade under the name Alexis. The novel

*The Alexis Wash Stand.*

feature of this device consists in the fact that it may be shut up in such a way as to wholly inclose the various receptacles of which it is composed. In the accompanying illustration we show a view of this washstand, with the door partially open and the cover raised. It will be noticed that the outer casing is highly decorated and the lower sections near the base corrugated, giving to it a very neat appearance. The basin is furnished with a patent plug, while the inside of the cover is fitted with a round mirror. The stand is carefully made and seems destined to meet a well defined demand for a convenient portable washstand.

A tunnel through the Sierra Nevada mountains, to cost $10,000,000, is a scheme favored by the Central Pacific Railroad officials. It might prove less costly than building snow sheds.

## The Novelty Oil Tank.

A device which will be of interest to the retail trade is being offered by W. J. Clark & Co., of Salem, Ohio. It is known as the Novelty Oil Tank and is provided with a helmet-shaped hood, the general arrangement of which will be understood from an inspection of the accompanying illustrations. This hood is made in two parts,

*The Novelty Oil Tank.—Fig. 1.—The Hood Open.*

hinged together in such a way that the front portion covers the sink while the other or stationary part covers the chamber at the rear. The hood is rigidly fixed to the top of the tank. By this arrangement, as

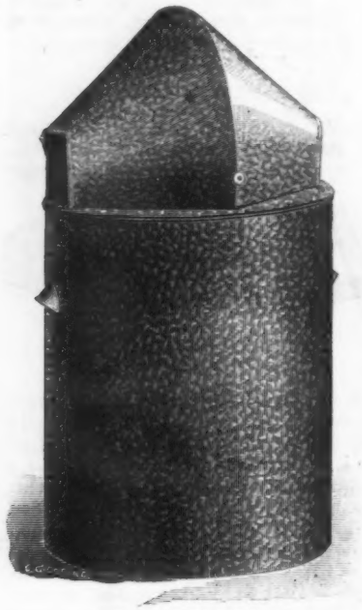


*Fig. 2.—Hood Closed.*

will be seen by an inspection of Fig. 1, a dry, clean, spacious chamber is provided for storing measures, lamps, wiping cloths, &c., while the sink is left clear and ready for immediate use. The manufacturers call attention to the fact that tanks having a hood over the sink commonly lack this convenience and necessitate the keeping of measures in the sink. When this is the case they become more or less soiled and unpleasant to handle, and they must be moved to make room when a customer's can is to be filled. Fig. 2 shows the tank closed.

The manufacturers of this device are also offering four or five other styles of

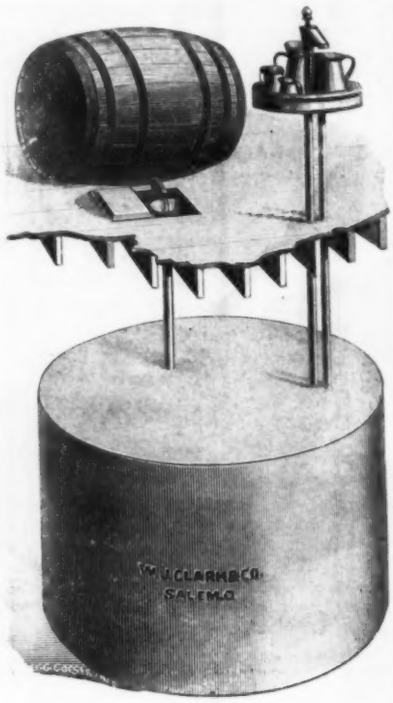



*Fig. 3.—Basement Tank with Open Sink.*

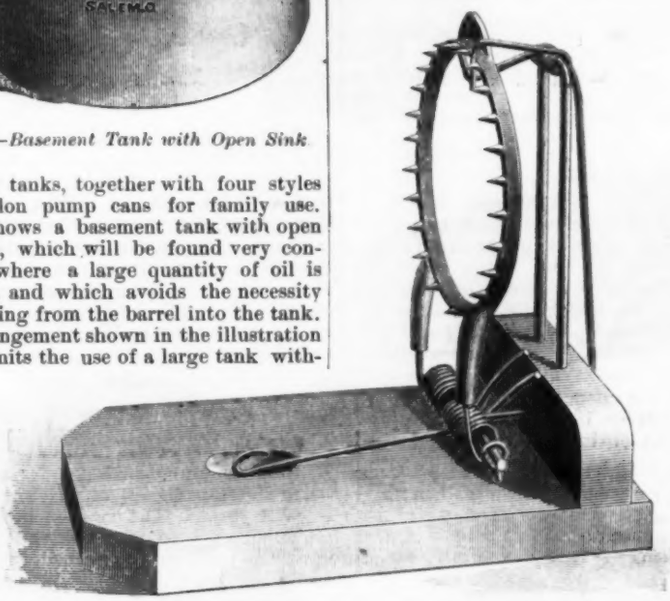
retailers' tanks, together with four styles of 5-gallon pump cans for family use. Fig. 3 shows a basement tank with open sink pan, which will be found very convenient where a large quantity of oil is handled, and which avoids the necessity of pumping from the barrel into the tank. The arrangement shown in the illustration also permits the use of a large tank without occupying valuable floor space. From an inspection of the engraving it will be seen that the tank, which is placed in the basement, is provided with a filler pipe

*Fig. 4.—Hood for Covering Pump and Waste-Pipe Sink.*

and also a pump of the ordinary lifting kind. When the tank is to be filled it is only necessary to roll the barrel of oil to the trap in the floor and allow the oil to run through the filler tube to the tank. The manufacturers state that this filler pipe may be so made as to conduct the oil from any locality higher than the tank, most convenient for emptying, and need not necessarily be directly over the tank, as shown in the cut. It will be seen that in connection with the pump there are two pipes leading from the tank upward. One of these is the waste-pipe connecting with the pan holding the measures and returns the drip or overflow of measures, &c., into the tank below. The manufacturers state that the arrangement may be made to cover two or more tanks coupled together and filled and emptied by means of one sink, filling-pipe and pump; or that two tanks containing different kinds of oil may be placed close together so that a pump and waste-pipe for each may be inclosed by one sink. One filling-pipe may also be used to serve both tanks by means of a swinging joint, making the pipe interchangeable. In Fig. 4 is shown the hood which is employed to cover the sink, pump and waste pipe and designed for use in connection with a basement tank or ordinary oil barrel, as may be desired.

## Exterminator Rat and Game Trap.

The F. F. Adams Company, Erie, Pa., are putting on the market this article, an illustration of which is presented here-



*Exterminator Rat and Game Trap.*

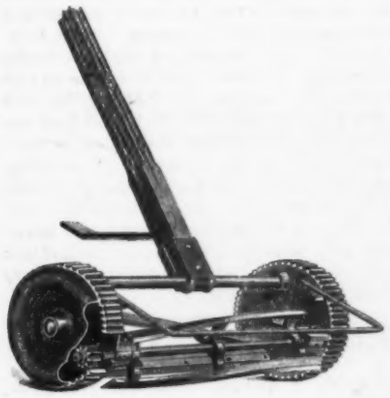
with. It is made under a patent dated November 5, 1889. The trap is designed for catching rats, muskrats, squirrels and other small game. Its construction and the manner of its operation will be apprehended from an inspection of the cut. It is easily set and is referred to as very sensitive, the slightest nibble at the bait springing the trap. The upright standard shown can be removed and packed flat with the bottom, thus insuring safe carriage and occupying little space. The traps are packed 1 gross in a case.

J. E. Borden, of Boston, who has made a close study of the industrial conditions in Massachusetts, is of opinion that the factory question is yearly becoming more serious. The machinery which has been invented during the past ten years is largely responsible for this state of affairs, as where from 5 to 100 men were formerly needed, the same work is now done by from one to five girls. As a result, there is a strong preponderance of women over men in manufacturing centers of the State, and wages are very much lower. The system, Mr. Borden says, has almost exhausted the available supply of young

women in Massachusetts, and is drawing from the other New England States, and even from Canada, to meet its needs for laborers.

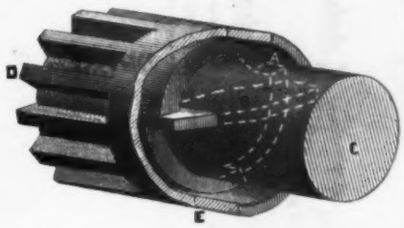
### The Lagonda Lawn Mower.

The Superior Machine Company, of Springfield, Ohio, are putting upon the market a new form of lawn mower under the foregoing title which is illustrated in Figs. 1, 2 and 3. This lawn mower, it is claimed, has less parts than other makes,



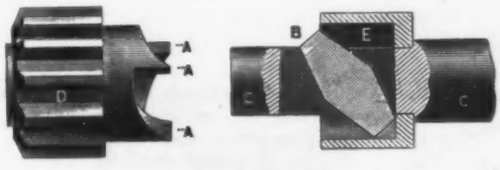
*The Lagonda Lawn Mower.*

and its construction therefore is simpler. Among the special advantages, which it is said to possess, is that of the positive force clutch, of which two views are given herewith. The peculiar form of this




*Positive Force Clutch.*

clutch, it is stated, obviates all sticking, clogging or wear, while its breadth is nearly 3 inches narrower than other machines designed to cut the same width of swath, hence securing a closer cut to

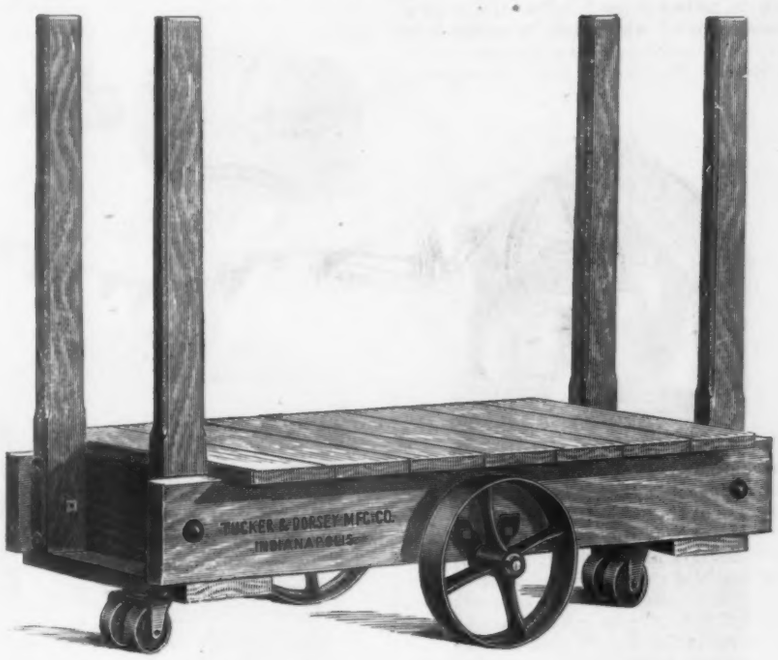



*View of Axle Showing Clutch and Wheel.*

edge than is customary. It is constructed with special reference to ease of cutting adjustment and manipulation, the material used being described as the best obtainable.

### The Tucker Factory and Wareroom Truck.

Tucker & Dorsey Mfg. Company, Indianapolis, Ind., have recently added to their extensive line the production of an improved form of factory and wareroom truck illustrated herewith. It will be noticed that it consists of a wooden platform frame, to which are attached two No. 8 double-wheel anti-friction casters, one at each end, with two large side wheels, 13 inches in diameter and 2½-inch face, revolving on a steel axle, 1 inch in diameter. These wheels being located outside of the frame are referred to as making it practically impossible to overturn the truck bearing the heaviest load. To the frame extending upward are secured four upright standards 36 inches in length




*The Tucker Factory and Wareroom Truck.*

above the platform, while the latter measures between the standards 48 x 28 inches. Special attention is directed to the corner irons used for the support of the standards, they being made of the best wrought iron and so constructed that any wear or looseness may be taken from either direction. The woodwork is described as thoroughly seasoned stock, the entire truck being very strong and durable and a very convenient arrangement for the purpose intended.

### The Peeler Rasp.

James L. Ingalsbe, South Hartford, Washington County, N. Y., is manufacturing the rasp shown in the illustration herewith given. The shape of the handle has, however, been modified and as now made it is more easily grasped and held.

*The Peeler Rasp.*

This rasp is designed for horseshoers and wagon makers and is described as constructed of the finest Jessop's steel, 24 gauge and stamped into form, with gouge-shaped teeth which are sharpened by special machinery and tempered by a process which is original with Mr. Ingalsbe. They are then sharpened for use. When the rasp becomes dull again it may be sharpened by a few moments' use of a special tool furnished with it. Particular reference is made to the durability of the rasp and the rapidity of its work. It is stated that while the common rasp only scrapes or tears off at each stroke so much dust or chip as the space in front of the tooth may contain, that illustrated cuts a continuous shaving with each tooth, the chips coming out inside. It is further stated that this rasp is so constructed as to be in a measure sharpened by drawing back, and if the edge be turned too much inward by this wearing process a slight application of the patent sharpening tool will again bring it up to cutting position. This tool is described as turning the edge like a currier's knife and making an excellent cutting edge, and contributes to the durability of the rasp. The tool is 19 inches in length and is sold at retail at $1.50. A number of testimonials are given from practical shoers, in which reference is made to the merits of the rasp.

### The Anchor Potato Parer.

W. E. & Jno. Woodwell, 632 Smithfield street, Pittsburgh, Pa., are putting on the market the above-named article

*The Anchor Potato Parer.*

which is represented in the accompanying cut. The parer is of steel and the handle of such shape as to be conveniently grasped. The manufacturers call attention to the ease with which the paring and slicing of potatoes, cucumbers, &c., is accomplished by this device, the paring being of uniform thickness, thus avoiding waste. The eyes and other foreign matter are removed by the use of the sharpened point. The simplicity of this parer and the rapidity of its operation are referred to by the manufacturers.

### The Hartford Safety.

The Hartford Cycle Company, Hartford, Conn., have recently put on the market the bicycle shown in the accompanying cut. The machine is not designed to compete with the highest grade cycles on the market, but its price, $100, and excellence of its design, material, workmanship and finish are emphasized, and the claim made that it is equal in quality to some of the so-called high grade machines now on the market, and sold at a considerably higher price. The superintendent and general manager of the firm were for a number of years connected with one of the largest cycle manufacturing concerns in the country, and the experience which they have thus acquired is referred to. It is stated that the pattern of the Hartford was decided upon after practical test, and that it is a well-made, simply constructed, reliable and easy running machine. The frame of the machine is the combination cross and diamond, and is made of cold-drawn, weldless steel tubing. The wheels are 30 inches in diameter, with felloes ⅞ inch solid rolled steel, crescent shape, tires ¾ inch molded gray Para rubber and spokes direct, No. 11½ gauge, 36 to each wheel. It has Ball bearings and Ball pedals, the latter fitted with the Hartford Elastic rubbers. The cranks are forged steel and detachable, with adjustment 5¾ to 6¾ inch. The neck and spindle are forged steel with conical bearings. The Sprocket wheel is detachable. The handle bars are ¾ inch cold-drawn weldless steel tubing, with vulcanite handles, the handle bar shaft being ¾ inch cold-drawn weldless steel tubing, adjustable as to hight in steering head and directly connected thereto. Humber pattern chain is used, with adjustment at rear forks and a Plunger brake is employed. The saddle is of the Hartford pattern, made under Kirkpatrick patents. The machine can be geared to 54 inches and weighs 49 pounds. Spokes and small parts of the cycle are nickeled, the balance being enameled. A tool-bag and a complement of tools are furnished with each machine, and the price, as stated above, is $100.

*The Hartford Safety.*

### Tubular Steel Wheelbarrows.

Grant C. McNeil, Akron, Ohio, in connection with his line of charging barrows, has recently begun the manufacture of tubular steel wheelbarrows, and in the accompanying cuts, Figs. 1 and 2, we illustrate two of the styles which are being put on the market. The barrows are made with solid tubular frame, permitting a forward dump. The tray is described as of the best sheet steel, and is made by cutting gores in a square sheet and riveting the sides of gores together after bending, thus making a tray of uniform thickness, which the manufacturer claims cannot be secured in a stamped tray. The tray is clamped to the frame with substantial braces. A very light and strong steel suspension wheel is used, which may be easily repaired when necessary. The shape of tray and handles is calculated to throw as much weight as possible on the wheel. The design of the barrows has been carefully considered, and their durability and quality are especially emphasized. The different styles of barrows are made in a variety of sizes. On special order the bottom of the tray is reinforced by an oak board between the tray and the frame. This gives much additional stiffness to the tray and makes it more durable.

*Fig. 1.—McNeil's Dirt Barrow.*

*Fig. 2.—McNeil's Coal Barrow.*

### The Newer Uses of Wire.

It is a circumstance which cannot have escaped notice that within the past few years the application of wire to different purposes has been widely extended, and there is now a large variety of uses for which it is successfully employed. So general, in fact, has its adoption become that the present has been characterized as the wire age—a term expressive enough to make comment almost unnecessary. This has, in a measure, arisen from the fact that makers of wire have been compelled to look carefully over wide areas for new outlets for the product of their mills. The advance in the efficiency of these mills, including especially the trains for rolling wire rods, within five or six years past, has been something surprising; in fact, it is a clear case of the adaptation of a high-speed class of machinery to a line of work which has previously been done at considerably lower speed and at far greater cost for repairs of fixtures than later mills have yet required.

Disregarding some of the more common and well-known uses of wire, as, for example, in the field of applied electricity and the manufacture of wire rope, we find that a large and growing demand for it has sprung up in turning out barbed-wire fencing, the manufacture of which, in a comparatively short space of time, has assumed commanding proportions. It is not difficult to realize that in this industry alone enormous quantities of wire are consumed. Wire door-mats also have become generally popular, and have been the forerunners of woven-wire matting for covering the floors of railroad passenger cars, and for various other purposes which will readily suggest themselves. Cleanliness, durability and economy are points which have been claimed for such matting with good reason, practical test having in every case given highly satisfactory results.

A somewhat unusual application of wire has been made in the construction of ordnance, of which the Longridge wire gun, in England, and the Woodbridge gun, in America, are interesting examples. While the results of actual firing tests of guns of this type have not been in every way encouraging, the principle of their design has some things to commend it, and the idea may yet be carried out in a thoroughly successful manner. In the Woodbridge gun a steel cylinder was surrounded by hammered steel bars reaching the entire length, and around these were wrapped the wire while under tension.

Another use to which steel wire, in a braided or woven form, has been applied is its adaptation to belting for driving machinery. Some things may be said both for and against this use of the material. Metallic plates or bands have been used more or less for belting for many years, but, however perfect their working may have proved in some cases, they are almost beyond hope of repair when trifling weakness begins to show itself. Braided or woven belts of wire could be more easily repaired, and, if made of a comparatively firm wire, they would in all probability hug a pulley over its entire width more perfectly than any band could when made of plates or sheets. It seems almost unnecessary to remark that the absolutely unyielding nature of the material of which the wire is made at the points of actual contact is wholly different from that of the slightly compressible leather or rubber-covered canvas generally used. Hence, it could hardly be expected that equally fav-

orable results should attend the use of the wire fabric until, as has been proposed, the yielding material is supplied in the shape of an elastic cover fitted to the pulley.

As a means of turning out fireproof stage scenery, for theatrical use, wire has found another interesting application. The fireproofing solutions and paints, hitherto employed in connection with the scenery in current use, have been found insufficient from the fact that they are unreliable, and, further, are frequently objectionable because of their destructive action on the materials to which they are applied. As a substitute for these latter, therefore, the fabric employed for the familiar wire window-screen suggested itself, being thin and flexible, almost like canvas, and of admitting when closely woven of being decorated by scene-painters in the ordinary way. The only objection which appears to have presented itself was in the circumstance that the wire gauze may be easily seen through. To overcome this, however, a special paste has been prepared which is of light weight and when applied to the gauze effectually closes up all the small openings. It does not detract from the flexibility of the fabric, nor does it injuriously affect its fireproof character.—*London Ironmonger.*

## NEW PUBLICATIONS.

MINING ACCIDENTS AND THEIR PREVENTION. By Sir Frederick Augustus Abel. With discussions by leading experts. Also laws regulating the working of coal mines. New York. The Scientific Publishing Company. 8vo., pp. 421.

The daily record of disastrous coal and mining accidents makes this a timely reprint of a valuable paper lately read before the Institution of Civil Engineers in London.

The total number of deaths from such accidents in the 11 years from 1875 to 1885 inclusive in British collieries was 12,315. Of these 23.57 per cent. were from explosions of fire-damp and 40.77 per cent. from falls of roofs and sides. Overwinding and the breakage of ropes largely caused the rest of the fatalities. This paper carefully examines into these causes and the remedies invented or suggested to avoid the loss of life. It is especially effective in explanations of the atmospheric conditions which are involved in mine explosions. It shows the necessity of the production of more sensitive and reliable fire-damp indicators, the most prominent of which are examined in detail. The difficulties of their operations are shown by the numerous conditions of gas accumulation. These are natural and artificial. The action of powerful ventilators induces the liberation of gas from seams and interstices in the form of blowers, indicated by hissing sounds and in damp mines by bubbles on the coal surfaces.

The essay gives a prominent treatment to the perils from sudden falls in atmospheric pressure by high winds, cyclones and the cold temperature of winter. These cause the escape into mine ways of gas from accumulations in deserted mine workings. The air thus becomes inflammable before any fall of the barometer takes place. The presence and effect of inflammable coal dust and its reciprocal action with a very low and unnoticeable amount of fire-damp produces the most dangerous conditions in coal mines, when either alone would not cause explosions to occur. Coal dust does not arouse the danger signals in the safety lamps, and yet adds to the terrible sufferings of the victims of these accidents.

The substitution of new methods of firing shots may prevent in large measures the fatalities. Among these are the water cartridge by which dynamite is surrounded by water, or the charge is packed with moss saturated with moisture. The lime cartridge, however, made of freshly-burned fat lime of high slaking power reduced to powder and converted into cylinders under powerful pressure, is perfectly satisfactory. The explosion of this cartridge requires from 10 to 40 minutes, but the men can return immediately to work. The heat developed does not exceed 600° F., and is insufficient to inflame a gas and air mixture, or to ignite any inflammable material. It is more successful in massive coal of medium thickness than in soft or very hard coal deposits. The English Government Commission pronounce it equal in effect to powder at no greater cost, and with absolute immunity from risk of explosion. Electrical methods of exploding charges are superior to any kind of safety fuses. The results of tests of 250 lamps of different patterns are given, showing that the Davy and Stephenson types, which excel all others, are yet unable to insure safety to the miner.

The discussions of this able paper by 35 experts, and correspondence of equal length upon mining accidents, add much to the value of this volume. Its collection of coal-mining laws of 13 of the United States, and of Great Britain and Prussia, constitute fully one-half of its pages. They are not accessible elsewhere.

A TEXT BOOK ON ROOFS AND BRIDGES. PART II. GRAPHIC STATICS. By Mansfield Merriman and Henry S. Jacoby. New York: John Wiley & Sons. 8vo., 124 pp., 4 Plates. $2.00.

This volume contains the second part of the course of instruction in roofs and bridges at Lehigh University. It gives the analysis of stresses by graphic methods. It will be followed by a third part, giving the design of a bridge, and a fourth containing a discussion of the four principal kinds of bridges. The new features of this text-book are found in its abbreviated processes in some of the diagrams for wind stresses, the determination of those due to initial tension, and the analysis of maximum moments and shears under locomotive wheel loads.

The Post Office people in charge of the foreign mails at the New York office say that the routine time on mail routes which combined girdle the globe will within a year be cut down to 75 days. This might be done to-day by simply reducing the margin for making connections at various points. The average time from Sidney via Auckland to San Francisco is now 23 days; the transcontinental journey occupies five days and the transatlantic trip to London seven days; total, 35 days.

The River Detroit Railway Bridge Company have their representative at Ottawa to obtain authority to construct a high level bridge. It is proposed to have a main span of 1065 feet long, with two smaller spans of 750 feet each, the structure to be 140 feet above high-water mark, thus allowing the tallest sparred vessels on the lakes to pass underneath. The total length of the bridge will be 2600 feet. It is to be open to all railways, and it is said that all the railway lines are favorable to its construction. The cost, it is expected, will be between $5,000,000 and $6,000,000.

E. J. Berwind, president of the Colorado Coal and Iron Company; E. F. Lehman, of Naylor & Co., and Chester Griswold have left for Colorado to inspect the properties of the Colorado Coal and Iron Company.

Joseph Lay & Co., Ridgeville, Ind., advise us, under date of 15th inst., that they are very much pressed on orders for their productions of both heavy and light brooms for factory and warehouse uses. If anything, the demand since January 1 has been in excess of the corresponding period last year from old customers, and to which list they are constantly adding new customers.

The new rifle with which the German army is now being armed is the third which has been adopted by the War Office at Berlin since 1871. Each of the three changes has involved an expenditure of $30,000,000.

An accident occurred Monday morning at Carnegie's mill, Beaver Falls, Pa.

## CONTENTS.


Taper Rolling Machine. Illustrated... 453
Peculiar Working of a Blast Furnace... 453
Hot-Air Engine. Illustrated... 455
Does Farming Pay... 455
Making Welded Pipes. Illustrated... 456
A Physical Prophecy of North America... 457
Cost of Electric Welding... 458
Rotary Squeezer. Illustrated... 459
Testimonial to Colonel Scott... 459
New York's Supremacy... 460
Southern Miscellany... 460
Sensitive Drill. Illustrated... 461
Providence Notes... 461
Ventilation by Disk Wheels. Illustrated... 463
The Week... 464

Manufacturing:
Iron and Steel... 465
Machinery... 465
Miscellaneous... 465

Editorials:
Iron-Making and Real Estate... 466
The Labor Movement Abroad... 466
Late Events in Cuba... 466
The Outlook in the Iron Trade... 467
Reorganization as a Business... 467

Correspondence:
Armor for Ships of War... 468
Early Iron-Making in East Tennessee... 468

New England Notes... 468
The Carload Cases... 469
Personal... 469
Virginia Iron Notes... 469

Trade Report:
Chicago... 470
Philadelphia... 471
Cincinnati... 471
Louisville... 472
Detroit... 472
Cleveland... 472
Chattanooga... 472
St. Louis... 472
Pittsburgh... 473
New York... 473
Financial... 474
Metal Market... 474
New York Metal Exchange... 475
Coal Market... 475
Imports... 475
British Iron and Metal Markets... 475
Foreign Markets... 476

Mr. Potter Resigns... 476

Hardware:
Wire Nails... 478
Cut Nails... 478
Miscellaneous Prices... 478
The Early Manufacture of Saws in this Country... 478
Items... 479
Portfolio for Trade Use... 480
Exports... 480

Review of the Wholesale Market in Paints and Oils:
Paints and Colors... 480
Animal and Vegetable Oils... 481

Causes of Fire Graphically Presented... 481
The New Tariff Rill... 481
Hardware Competitions... 482
Improved Pedal Valve. Illustrated... 483
The Ice King Refrigerator. Illustrated... 483
Alexis Washstand. Illustrated... 483
The Novelty Oil Tank. Illustrated... 484
Exterminator Rat and Game Trap. Illus... 484
The Laconda Lawn Mower. Illustrated... 485
The Tucker Factory and Wareroom Truck. Illustrated... 485
The Peeler Rasp. Illustrated... 485
The Anchor Potato Parer. Illustrated... 485
The Hartford Safety. Illustrated... 486
Tubular Steel Wheelbarrows. Illustrated... 486
The Newer Uses of Wire... 486
New Publications... 487
Current Hardware Prices... 488
Paints, Oils and Colors... 493
Current Metal Prices... 494

# CURRENT HARDWARE PRICES.

## MARCH 19, 1890.

*Note.*—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

### Adjusters, Blind.

Domestic.....₱ doz $3.00, 33⅓%
Excelsior.....₱ doz $10.00.....50&10&2%
Washburn's Self-Locking.....20&20&10%

### Ammunition.—

*Caps, Percussion,* ⅝ 1000—
Hicks & Goldmark's and Union Metallic Cartridge Co.
F. L. Waterproof, 1-10's.....34@35¢
E. B. Trimmed Edge, 1-10's.....46@48¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.....46@47¢
Musket Waterproof, 1-10's.....50¢
G. D.....28¢
S. B. Genuine Imported.....45¢
Eley's E. B.....54¢ @ 55¢
Eley's D Waterproof, Central Fire...$1.00

*Cartridges—*
Rim Fire Cartridges.....50&5&2 %
Rim Fire Military.....15&2 %
Cent. Fire, Pistol and Rifle.....25&5&2 %
Cent. Fire, Military and Sporting 15&5&2 %
Blank Cartridges, except 22 and 32 cal., additional 10 % on above discounts.
Blank Cartridges, 22 cal., $1.75.....2 %
Blank Cartridges, 32 cal., $3.50.....2 %
Primed Shells and Bullets.....15&5&2 %
B. B. Caps, Round Ball, $1.75.....2 %
B. B. Caps, Con. Ball, Swgd., $2.00.....2%

*Primers—*
Berdan Primers, $1.00.....2%
B. L. Caps (for Sturtevant Shells) $1.00, 2%
All other Primers, $1.20.....2%

*Shells—*
First quality, 4, 8, 10 and 12 gauge 25&10&2%
First quality, 14, 16 and 20 gauge ($10 list).....30&10&2%
Star, Club, Rival and Climax brands, 33⅓&10&2%
Seibold's Comb. Shot Shells.....15&2%
I X L, 10 and 12 guage.....40&5&2%
"Special," 16 gauge.....30&10&2%
"Special," 10 and 12 gauge.....40&10&2%
Fowler's Pat.....$3.25
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax.. 65&2%

*Shells Loaded—*
Standard. List.....40@40&10&5%

*Wads*—Price per M.

| | | |
|---|---|---|
| U.M.C.&W. R. A.—B. E., 11 up... | 68¢ | Dis. 20&2 |
| U.M.C.&W. R. A.—B. E., 9&10... | 82¢ | |
| U.M.C.&W. R. A.—B. E., 8..... | 96¢ | |
| U.M.C.&W.R.A.—B. E., 7..... | $1.10 | |
| U.M.C.&W. R. A.—P. E., 11 up.. | 1.15 | |
| U.M.C.&W. R. A.—P. E., 9&10.. | 1.50 | |
| U.M.C.&W. R. A.—P. E., 8..... | 1.70 | |
| U.M.C.&W.R.A.—P. E., 7 ..... | 1.80 | |

Eley's B. E., 11 up.....$1.75
Eley's P. E., 11@20.....2.80

### Anvils.—

Eagle Anvils, ₱ ℔ 10¢.....15@15&5%
Peter Wright's.....10½¢
Armitage's Mouse Hole.....9¢
Armitage's Mouse Hole, Extra.11½@11¾¢
Trenton.....9½@10¢
Wilkinson's.....9¾@10¢
J. & Riley Carr, Pat. Solid.....11@11½¢
Moore & Barnes Mfg. Co.....33⅓%

*Anvil Vise and Drill—*
Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise, $3.00.....40&10%
Star.....45&5%

### Apple Parers—See Parers, Apple, &c.

### Augers and Bits—

Douglass Mfg. Co.
Wm. A. Ives & Co.
Humphreysville Mfg. Co.
French, Swift & Co. (F. H. Beecher, P. S. & W. Co.
Rockford Bit Company.
} 70%

Cook's, Douglass Mfg. Co.....55 %
Cook's, N. H. Copper Co.50&10&50&10&5%
Ives' Circular Lip.....60%
Patent Solid Head.....30%
C. E. Jenning & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₱ set, 32½ quarters, No. 5, $5; No. 30, $3.50.20%
Lewis' Patent Single Twist.....45%
Russell Jennings' Augers and Bits.25&10%
Imitation Jennings' Bits.....60&60&5%
Snell's Jennings Pattern.....60%
Pugh's Black.....20%
Rockford, Jenning's Pattern.....60%
Car Bits.....50&10&60%
Car Bits, P. S. & W. Co.....60&10 %
Snell's Car Bits.....60%
L Hommodieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....10%
Cincinnati Bell-Hangers' Bits.....30%

*Bit Stock Drills—*
Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30&30&5%
Williams' or Holt's, for metal.50&10&10%
Williams' or Holt's, for wood...40&10%
Cincinnati, for wood.....30&5%
Cincinnati, for metal.....40&10

*Expansive Bits—*
Clarks' small, $18; large, $20...35@35&5%
Ives' No. 4, ₱ doz $60.....40%
Swan's.....40%
Steer's, No. 1, $26; No. 2, $22.....35%
Stearns' No. 2, $48.....20%

*Gimlet Bits—*
Common.....₱ gross $2.75@$3.25
Diamond.....₱ doz $1.10.....25&10%
Bee.....25@25&5%
Double Cut Shepardson's.....45@45&10%
Double Cut, Ct. Valley Mfg. Co...30&10%
Double Cut, Hartwell's, ₱ gro.....$5.25
Double Cut, Douglass'.....40&10%
Double Cut, Ives'.....60@60&10%

*Hollow Augers—*
Ives
French, Swift & Co.
Douglass'
} 33⅓ @ 33⅓&10%
Bonney's Adjustable, ₱ doz $48....40&10%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood's.....25@25&10%
Cincinnati Adjustable.....30@30&5%
Cincinnati Standard.....25&10%

*Ship Augers and Bits—*
L'Hommedieu's.....15&10@15&10&5%
Watrous'.....15&10@15&10&10%
Snell's.....15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10@5%

### Awl Hafts—See Hafts, Awl.

### Awls, Brad Sets, &c—

Awls, Sewing, Common ₱ gr $1.70, 35%
Awls, Should. Peg. ₱ gr $2.45, 40@40&10%
Awls, Pat. Peg...₱ gr 63¢.....40@40&10%
Awls, Shouldered Brad..2.70 ₱ gr.....35%
Awls, Handled Brad...$7.50 ₱ gr.....45%
Awls, Handled Scratch ₱ gr, $7.50.35&10%
Awls, Socket Scratch, ₱ doz, $1.50.25@30%

### Awl and Tool Sets—See Sets, Awl and Tool.

### Axes—

*Makers' and Special Brands—*
First quality.....₱ doz $6.00@$6.50
Others.....₱ doz $5.50@$5.75

### Axle Grease—See Grease, Axle.

### Axles—

No. 1, 4½¢@5¢, No. 2 5½¢@6¾¢
Nos. 7 to 14.....55&5%
Nos. 15 to 18.....47½%
Nos. 19 to 22.....70%
} 3 % cash

National Tubular Self-Oiling: Standard Farm (1 to 5) and Special Farm (A1 to A5):
Less than 10 sets.....33⅓%
Over 10 sets.....33⅓&5%

## Bag Holders.—See Holders, Bag.

### Balances—

Spring Balances.....50%
Common 24-℔.....₱ doz $1.50.....50%
Chatillon's Spring Balances.....50%
Chatillon's Circular Spring Balances.60%

### Bars.

*Crow—*
Cast Steel.....₱ ℔ 4¼¢
Iron, Steel Points.....₱ ℔ 3¾¢

### Basins, Wash—

Standard Fiberware, No. 1, 10½-inch, $2; 12-inch, $2.25; 13½-inch, $2.75; 15-inch, $3.25.

### Beams, Scale—

Scale Beams, List Jan. 12, '82...50&10& 50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%

### Beaters, Egg, &c—

Keystone, P.D.&C., Each, No. 1, $1; No. 2, $2.....25 %
Dover.....₱ doz $1.50
National, ₱ doz $4.50.....33⅓%
Family (T. & S. Mfg. Co.), ₱ gro $17.00@ $18.00
Duplex (Standard Co.).....₱ doz $1.25
Rival (Standard Co.).....₱ doz $1.00
Duplex Extra Heavy (Standard Co.)... ₱ doz $3.50
Triumph (T. & S. Mfg. Co.), ₱ gro $10.50 @$11.50
Advance, No. 1.....₱ gro $10.50
Advance, No. 2.....₱ gro $10.00
Bryant's.....₱ gro $14.00
Ayres' Spiral.....₱ gro $5.00
Double (H. & R. Mfg. Co).....₱ gro $16.20
Easy (H. & R. Mfg. Co.).....₱ gro $14.00
Triple (H. & R. Mfg. Co.).....₱ gro $16.20
Spiral (H. & R. Mfg. Co.).....₱ gro $4.50
Paine, Diehl & Co.'s.....₱ gro $24.00

### Bells—

*Cow -*
Common Wrought.....60&10%
Western.....20&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Dodge, Genuine Kentucky....70@70&10%
Texas Star.....50&10@50&10&5%
Call.....40@40&5%
Farm Bells.....₱ ℔ 3¢@3¼¢
Steel Alloy Church and School Bells..40%

*Door—*
Gong, Abbe's.....63½&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Taylor's.....25&10%
Crank Brooks'.....50&10&2%
Crank Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. E. M. Co.'s.....50&10&2%
Pull, Brook's.....50&10&2%
Pull, Western.....25&10%

*Electric,*
Wollensak's.....20%
Bigelow & Dowse.....20%
Taylor's.....20%

*Hand—*
Light Brass.....70&10 @ 75%
Extra Heavy.....60&10%
White Metal.....60&10&10%
Silver Chime.....33⅓&10%
Globe (Cone's Patent).....25&10@35%

### Bellows—

Blacksmiths'.....60@60&5%
Molders'.....40@40&10%
Hand Bellows.....40&10@50%

### Belting, Rubber—

Common Standard.....70&10%
Standard.....70&70&5%
Extra.....60&5@60&10%
N. Y. B. & P. Co., Carbon.....60&10&5%
N. Y. B. & P. Co., Diamond.....50&10%

### Bench Stops—See Stops, Bench.

### Benders, Upsetters, Tire.

Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%

### Bits—

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.

### Bit Holders—See Holders.

### Blind Adjusters—See Adjusters, Blind.

### Blind Fasteners—See Fasteners, Blind.

### Blind Staples—See Staples, Blind.

### Blocks—

Ordinary Tackle, list May 20, 1889...50%
Cleveland Block Co., Mal. Iron.....50%
Moore's Novelty, Mal. Iron.....50%

### Bolts—

*Carriage, Machine, &c.—*
Com. list June 10, '84.....70&12½&2%
Genuine Eagle, list Oct., '84...75&10@80%
Phila. pattern, list Oct. 7, '84..80@80&10%
R.B.&W., old list.....70%
Machine, list Jan. 1, 1890.....75&10
Bolt Ends, list Jan. 1, 1890.....75&10

*Door and Shutter—*
Cast Iron Barrel, Square, &c..70@70&10%
Cast Iron Shutter Bolts.....70@70&10%
Cast Iron Chain (Sargent's list)....65&10%
Ives' Patent Door Bolts.....60%
Wrought Barrel.....70@70&10%
Wrought Square.....70@70&10%
Wr't Shutter, all Iron, Stanley's..60&10%
Wr't Shutter, Brass Knob, " ..40&10%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list...55&10%
Wr't Sunk Flush, Stanley's list...50&10%
Wr't B.K.Flush, Com'n " ...55&10%

*Stove and Plow—*
Stove.....60%
Plow.....60&5%
R. B. & W., Plow.....55%

*Tire—*
Common, list Feb. 28, '83.....65%
Port Chester Bolt and Nut Company:
Empire, list Feb 28, '83.....65%
Keystone, Philadel., list Oct. '84....80%
Norway, Phila., list Oct, '84.....75%
American Screw Company:
Norway, Phil., list Oct. 16, '84.....75%
Eagle, Phil., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
R.B.&W., Philadel., list Oct. 16, '84....80%

### Borers, Tap.

Common and Rind.....20&10%
Ive's Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20&10@30%
Clark's.....33⅓@35%

### Borax.....₱ ℔ 9½@10½¢

### Boring Machines—See Machines, Boring.

### Bow Pins—See Pins, Bow.

### Boxes, Wagon.

Per ℔.....2¾¢

### Braces.—

Amidon's
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Rachet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
P. S. & W. Co., Peck's Patent.....60%
Barber's,
Nos. 10 to 16.....50%
Nos. 30 to 33.....50%
Nos. 40 to 63.....50&10%
Barker's,
Nos. 8, 10 and 12.....75&10@80%
Plated, Nos. 8, 10 and 12....65&10@70%
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barbers.....60&5%
Spofford.....60&5@60&10%
Osgood's Ratchet.....40&10@50%
Spofford's.....50&5@50&10%

### Brackets—

Shelf plain, Sargent's list, 55&10@55& 10&10%
Shelf, fancy, Sargent's list, 60&10@60 &10&10%
Reading, plain.....50&10@60&10&5%
Reading, Rosette.....60&10@60&10&10%

### Bright Wire Goods—See Wire.

### Broilers—

Henis' Self-Basting. { Inch..... 9 10 9x11 Per doz...$4.50 5. 6.50

### Buckets, Well.

*Galvanized—*
Hill's.....₱ doz, 12 qt, $4.25; 14 qt, $5.25
Iron Clad.....₱ doz, 14 qt, $4.25@$4.50
Whiting's Flat Iron Band.....$4.25@4.50
Whiting's Wired Top..₱ doz $4.00@4.25

### Bull Rings—See Rings, Bull.

### Butcher's Cleavers—See Cleavers, Butchers'.

### Butts—

*Brass—*
Wrought Brass.....75@75&10%
Cast Brass, Tiebout's.....33⅓%
Cast Brass, Corbin's, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%

*Cast Iron—*
Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.
Loose Joint, Japanned.
Loose Joint, Jap. with Acorns..
Parliament Butts.
Mayer's Hinges.
Loose Pin, Acorns.
Loose Pin, Acorns.
Loose Pin, Acorns, Japanned...
Loose Pin, Acorns, Japanned, Plated Tips
} .70&5@ 70&10%

*Wrought Steel—*
Fast Joint, Narrow.
Fast Joint, Lt. Narrow.
Fast Joint, Broad.
Loose Joint, Broad
Table Butts, Back Flaps, &c.
Inside Blind, Regular.
Inside Blind, Light.
Loose Pin.
} .70&5@ 70&10%

Bronzed Wrought Butts.....50%

### Calipers—See Compasses.

### Calks, Toe—

Gautier.....₱ ℔ 5½¢@6¢
Dewicks (Burke).....₱ ℔ 5½¢@6¢

### Can Openers—See Openers, Can.

### Cards—

Horse & Curry.....10&10@10&10&10%
Cotton.....10@10&10%
Wool.....10@10&10%

### Carpet Stretchers—See Stretchers Carpet.

### Carpet Sweepers—See Sweepers Carpet.

### Cartridges—See Ammunition.

### Casters—

Bed.....
Plate.....
Shallow Socket.....
Deep Socket.....
Yale Casters, list May, 1884...30&10&40%
Yale, Gem.....60@60&5%
Martin's Patent (Phœnix).....45&10&50%
Payson's Anti-friction.....60@60&10%
Giant Truck Casters.....30%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50%
} Brass....55@55&10% Others...60@60&10%

### Cattle Leaders—See Leaders, Cattle.

### Chain—

Trace, 6½-10-2, exact, ₱ pair, $1.03.....50&10@50&10&5%
Trace, 6½-10-3, exact, ₱ pair 92¢.....50&10@50&10&5%
Trace, 7-10-2, exact, ₱ pair $1.11.....50&10@50&10&5%
NOTE.—Traces, "Regular" sizes, 3¢ net ₱ pair less than exact.
Log, Fifth, Stretcher, and other fancy Chains, List Nov. 1, 1884 50&10@50&10&5%

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| American Coil, in cask lots, | 3-16 | ¼ | 5-16 | ⅜ | 7-16 | ½ | ⅝ | ¾ |
| | $3.00 | 5.70 | 4.80 | 4.20 | 3.90 | 3.75 | 3.65 | 3.55 |

Less than cask lots, add ½¢@1¢ ₱ ℔.
German Coil, list of June 20, 1887 50&10&5@60%
German Halter Chain, list of June 20, 1887.....50&10&5@60%
Covert Halter.....60&2%
Covert Traces.....35@2%
Oneida Halter Chain.....60@60&5%
Galvanized Pump Chain.....₱ ℔ 5@5½¢
Jack Chain, Iron.....75@75&5%
Jack Chain, Brass.....70&5@70&10%

### Chalk—

White.....₱ gr 50¢
Red.....₱ gr 70¢
Blue.....₱ gr 85¢
See also Crayons.

### Chalk Lines—See Lines.

### Chisels—

*Socket Framing and Firmer.*
P. S. & W.
New Haven
Witherby.
Mix.
Ohio Tool Co.
} .75 @ 75&10

Douglass.....75@75&5%
Buck Bros.....30%
Merrill.....60&10@60&10&5%
L. & J. White.....30&30&5%

*Tanged and Miscellaneous.*
Tanged Firmers.....40&10@50%
Butchers'.....$4.75@$5.00
Spear & Jackson's.....$5 to $
Buck Bros.....30
Cold Chisels, ₱ ℔.....10@1

**Chucks—**

Beach Pat.....each, $8.00.....20%
Morse's Adjustable,each, $7.00, 30@20&5%
Danbury.....each, $6.00, 30@30&5%
Syracuse, Bals Pat.....25%
Skinner's Pat. Drill Chucks.....30%
Skinner's Independent Lathe Chucks.40%
Skinner's Pat. Comb. Chuck.....40%
Union Mfg. Co.,
Victor.....$8.50, 25%
Combination.....40%
Universal.....40%
Independent.....40%

**Clamps—**

R. I. Tool Co.'s Wrought Iron.....25%
Adjustable, Cincinnati.....15&10%
Adjustable, Hammers.....15%
Adjustable, Stearn's.....20&10%
Stearn's Adjustable Cabinet and Corner.....20&10%
Cabinet, Sargent's.....60&10%
Carriage Makers', Sargent's.....70&10%
Carriage Makers', P., S. & W. Co 40&10%
Eberhard Mfg. Co.....40&5&40&10%
Warner's.....40&10&40&10&5%
Saw Clamps, see Vises. Saw Filers'.
Carpenters', Cincinnati.....15%

**Cleavers.**

*Butchers'.*
Bradley's.....25@30%
L. & I. J. White.....20&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co.'s.....40%
P., S. & W.....33⅓&5@33⅓&10%
Foster Bros.....30%
Schulte, Lohoff & Co.....40@40&5%

**Clips—**

Norway, Axle, ¼ & 5-16.....55&5&5%
2nd grade Norway Axle, ¼ & 5-16 65&5%
Superior Axle Clips.....60%&5&70%
Norway Spring Bar Clips, 5-16..60&5&5%
Wrought-Iron Felloe Clips.....₱ lb, 5½¢
Steel Felloe Clips.....₱ lb, 5¢
Baker Axle Clips.....[illegible]

**Cloth and Netting, Wire**—See Wire, &c.

**Cockeyes**.....50%

**Cocks, Brass.**

Hardware list.....50&2%

**Coffee Mills**—See Mills, Coffee.

**Collars, Dog, &c.**

Medford Fancy Goods Co.....40&10%
Embossed, Gilt, Pope & Steven's list 30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list.....40%

**Combs, Curry.**

Fitch's.....50&10@50&10&10%
Rubber, per doz $10.00.....20%
Perfect.....50%

**Compasses, Dividers, &c.—**

Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s
Dividers.....60&5%
Compasses & Calipers.....50&5%
Wing and Inside or Outside.....50&5%
Double.....60%
(Call's Pat. Inside).....30%
Excelsior.....50%
J. Stevens & Co.'s.....25&10%
Starrett's
Spring Calipers and Dividers 25&10&10%
Lock Calipers and Dividers.....25&10%
Combination Dividers.....25&10%

**Coopers' Tools**—See Tools, Coopers'.

**Cord, Sash—**

Common.....₱ lb 10@11¢
Patent, good quality.....₱ lb 13@13½¢
White Cotton Braided, fair...₱ lb 28@29¢
Common Russia Sash.....₱ lb 13½¢
Patent " " .....₱ lb 15¢
Cable Laid Italian Sash.....₱ lb 22@23¢
Indian Cable Laid " .....₱ lb 13¢
Silver Lake—
A Quality, White, 50¢.....10&10&5%
A Quality, Drab, 55¢.....10&10&5%
B Quality, White, 50¢.....20&10&5%
B Quality, Drab, 55¢.....20&10&5%
C Quality, White (only).....28½@28¢
Sylvan Spring, Extra Braided, White, 34¢
Sylvan Spring, Extra Braided, Drab..39¢
Semper Idem, Braided, White.....30¢
Egyptian, India Hemp, Braided.....25¢
Samson—
Braided, White Cotton, 50¢...30@30&5%
Braided, Drab Cotton, 55¢....30@30&5%
Braided, Italian Hemp, 55¢...30@30&5%
Braided, Linen, 80¢.....30@30&5%

**Corkscrews**—See Screws, Cork.

**Corn Knives and Cutters**—See Knives, Corn.

**Crackers, Nut—**

Table (H. & B. Mfg. Co.).....40%
Blake's Pattern.....₱ doz $2.00, 10%
Turner & Seymour Mfg. Co.....50%

**Cradles—**

Grain.....50&5&2@50&10&2%

**Crayons.**

White Crayons, ₱ gr, 12@12½¢.....10%
D. M. Stewart Mfg. Co., Metal Workers, ₱ gr, $2.50.....25%
D. M. Stewart Mfg. Co., Rolling Mill, ₱ gr, $2.50.....25%
See also Chalk.

**Crow Bars**—See Bars, Crow.

**rry Combs**—See Combs, Curry.

**ns**—See Pins Curtain.

**Cutters—**

*Meat.*
Dixon's ₱ doz.....40&5%
Nos..... 1 2 3 4
$14.00 $17.00 $19.00 $20.00
Woodruff's ₱ doz.....40&5%
Nos..... 100 150
$15.00 $18.00
Hales Pattern ₱ doz.....70@70&5%
Nos..... 11 12 13
$27.00 $33.00 $45.00
American.....30%
Nos..... 1 2 3 4 A 5
Each.....$5 $7 $10 $25 $50 $60
Enterprise.....30%
Nos..... 10 12 22 32 42
Each.....$3 $2.50 $4 $6 $15
Pennsylvania.....40&10%
Nos..... 1 2 3 00
₱ doz....$24.00 $28.00 $36.00 $28.00
Miles' Challenge ₱ doz.....45@45&10%
Nos..... 1 2 3
$22.00 $30.00 $40.00
Home No. 1.....₱ doz, $26.00, 55&10%
Draw Cut, each:
Nos..5 2 6 8
$50 $75 $80 $225.....20@25%
Beef Shavers (Enterprise).....20&10@30%
Little Giant.....50%
Chadborn's Smoked Beef Cutter, ₱ doz $66.00

*Tobacco.*
Champion.....20&10@30%
Wood Bottom.....₱ doz $5.00@5.25
All Iron.....₱ doz $4.25
Nashua Lock Co.'s..₱ doz, $18.00 50@55%
Wilson's.....55%
Sargents'₱ doz, $24, 55&10%
Acme.....₱ doz $20.00, 40%

*Washer.*
Smith's Pat.....₱ doz $12.00, 20&10&10%
Johnson's.....₱ doz $11.00, 33⅓%
Penny's.₱ doz Pol. $14; Jap'd, $16.00, 55%
Appleton's.....₱ doz $16.00, 60&10%
Bonney's.....30&10%
Cincinnati.....25&10%

**Cutlery—**

Beaver Falls & Booth's.....33⅓
Wostenholme.....$7.75 to $

## Dampers, &c—

Dampers, Buffalo.....40&10%
Buffalo Damper Clips.....40&10%
Crown Damper.....40%
Excelsior.....40&10%

**Diggers, Post Hole, &c —**

Samson Post Hole Digger, ₱ doz $36.00, 25&10%
Fletcher Post Hole Augers, ₱ doz $36, 20%
Eureka Diggers.....₱ doz $16.00@17.00
Leed's.....₱ doz $8.00@9.00
Vaughan's Post Hole Auger, ₱ doz $13.00@14.00
Kohler's Little Giant.....₱ doz. $18.00
Kohler's Hercules.....₱ doz. 15.00
Kohler' New Champion.....₱ doz. $9.00
Schniedler.....₱ doz. $18.00
Ryan's Post Hole Diggers...₱ doz $24.00
Cronk's Post Bars, ₱ doz $60.00, 50&5&50&10%
Gibbs Post Hole Digger, ₱ doz $30.00, 50¢
Imperial, ₱ doz $15.....45%

**Dividers—**

See Compasses.

**Dog Collars**—See Collars, Dog, &c.

**Door Springs**—See Springs, Door.

**Drawers.**

Money, ₱ doz.....$18&$20

**Drawing Knives** — See Knives, Drawing.

**Drills and Drill Stocks—**

Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50,20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls.....each $2.00, 25%
Breast, Bartholomew's....each $2.50, 25&10&40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll's.....25%
Ratchet, Parker's.....20@20&5
Ratchet, Whitney's.....20&10%
Retchet, Weston's.....20@25%
Ratchet, Moore's Triple Action..25@30%
Ratchet, Curtis & Curtis.....30%
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools.....$1.75@$1.85

*Twist Drills—*
Morse.....50&10&5%
Standard.....50&1 &5%
Syracure (Metal list).....50&10%
Cleveland.....50&10&5%
Williams.....50&10&10%
New Process.....50&10&5%

**Drill Bits.**—See Augers and Bits.

**Drill Chucks.**—See Chucks.

**Dripping Pans**—See Pans, Dripping.

**Drivers, Screw.**

Douglas Mfg. Co.....20@10&10%
Disston's.....4 &10%
Diston's Pat. Excelsior.....45&10%
Buck Bros.....30%
Stanley R. & L. Co.'s
Varnished Handles.....65&10%
Black Handles.....60&10%
Sargent & Co.'s
No. 1 Forged Blade.....60&10&10%
Nos. 20, 30 and 40.....60%&10& 0%
P. S. & W.....70 %
Knapp & Cowles' No.1.....60& 0&70%
No. 1 Extra.....50@60&10
Nos. 00 & 4.....50&@& &10&5%
Stearns'.....25&10&5%
Gay & Parsons.....35%
Champion.....25&10%
Clark's Pat.....30@33⅓%
Crawford's Adjustable.....30%
Eilrich's Socket and Ratchet..25@25& 0%
Allan's Spiral, new list.....25%
Kolb's Common Screw Bits.₱ doz $5.00,25&10%
Syracuse Screw-Driver Bits...30&30&5%
Screw-Driver Bits .. .. ₱ doz. 50@75¢
Screw-Driver Bits, Parr's.....₱ gro $6.25
Fray's Hol. Hdle. Sets. No. 3. $14.00, 25@25&10%
P.D. & Co.'s all Steel.....50%
Cincinnati.....50&10%
Brace Screw Drivers.....25&10%
Buck Bros.' Screw-Driver Bits .... %

## Egg Beaters.—See Beaters, Egg.

**Egg Poachers.**—See Poachers, Egg.

**Electric Bell Sets.**—See Bells, Electric.

**Emery.** — No. 4 to No. 54 to Flour, CF

| | 46 gr. | 150 gr. | F. FF. |
|---|---|---|---|
| Kegs, ₱ lb | 4½¢ | 5 ¢ | 2½¢ |
| ½ kegs, ₱ lb | 4¾¢ | 5½¢ | 2¾¢ |
| ¼ kegs, ₱ lb | 5 ¢ | 5½¢ | 3 ¢ |
| 10-lb cans, 10 in case | 6 ¢ | 6½¢ | 5 ¢ |
| 10-lb cans, less than 10 | 10 ¢ | 10 ¢ | 7½¢ |

**Enameled and Tinned Ware**—See Ware, Hollow.

**Escutcheon Pins**—See Pins, Escutcheon.

**Escutcheons.**

Door Lock....Same dis as Door Locks.
Brass Thread.....60@60&10%
Wood.....25%

## Fasteners, Blind—

Mackrell's, ₱ doz. $1.00.....20@20&10%
Van Sand's Screw Pat., $15 ₱ gr..60&10%
Van Sand's Old Pat., $15.00 ₱ gr..55&10%
Washburn's Old Pattern, ₱ gr.....$9.00
Merriman's.....new list
Austin & Eddy No. 2008 ₱ gr.....$9.00
Security Gravity, ₱ gr.....$9.00

**Faucets.—**

Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33⅓%
Star.....60%
Frary's Pat. Petroleum.....40&5&2%
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list..60%
Metallic Key, Leather Lined....60&10@ 60&10&10%
Cork Lined.....70&5@70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl lots....50&10%
John Sommers'
Peerless Best Block Tin Key.....40%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self-Measuring
Enterprise, ₱ doz $50.00.....20&10%
Lane's, ₱ doz $36.00.....25&10%
Victor, ₱ doz $36.00.....25&10%

**Felloe Plates**—See Plates, Felloe.

**Fifth Wheels.—**

Derby and Cincinnati.....50&5%
Brewster.....55&5%

**Files—**

*Domestic—*
Nicholson Files, Rasps, &c.....60&10@60&10&5%
Nicholson (X. F.) Files.....25%
Nicholson's Royal Files (Seconds).....75%
(extra prices on certain sizes)
Other makers, best brands.....60&20%
Fair brands.....60&10&10@70&5%
Second quality.....70&10@75&10%
Nicholson's Horse Rasps....60&10@60& 10&5%
Heller's Horse Rasps.....50&7½@50&10%
McCaffrey's Horse Rasps.....50&10%
Chelsea Horse Rasps, Hand Cut...50&10%

*Imported—*
Moss & Gamble....List, April 1, 1883, 15%
Butcher.....Butcher's list, 20%
Stubs.....Stubs list, 25@30%
Turton's.....Turton's list, 20@25%
Greaves' Horse Rasps..American list, 60%

**Fixtures.**

*Grindstone—*
Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%
P., S. & W. Co.....50&10%

**Fluting Machines**—See Machines, Fluting.

**Fluting Scissors** — See Scissors, Fluting.

**Fodder Squeezers**—See Squeezers, Fodder.

**Forks—**

Hay, Manure, &c., 1880 List.....70%
Hay, Manure, &c., Phila. List 60@60&5%
Plated, see Spoons.

**Frames—**

*Saw—*
White Vermont.....₱ gro $9.00@10.00
Red, Polished and Varnished.....₱ doz $1.50, 25%

*Screen, Window and Door—*
Porter's Pat. Window and Door Frame. 33⅓&10%
Warner's Screen Corner Irons..33⅓&10%
Stearns' Frames and Corners..25@25&10%

**Freezers, Ice Cream—**

Buffalo Champion.....65&65&5%
Shenard's Lightning.....65@65&5%
White Mountain.....50&20&5%
New Arctic.....50&10&5%
American.....60%
Gem.....65%
Blizzard.....70%
Double Action Crown.....60%
Crown.....60%
Star.....60
Peerless and Giant.....60&10
Zero and Pet.....65&10
Boss.....65&10&10
Keystone, P. D. & Co., each, $1.50.....25%

**Fruit and Jelly Presses**—See Presses, Fruit and Jelly.

**Fry Pans**—See Pans, Fry.

**Fuse—** ₱ 1000 ft
Common Hemp Fuse, for dry ground.$2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground.. 3.85
Double Taped Fuse, for very wet gr. 4.85
Triple Taped Fuse, for very wet gr.. 5.60
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water.12.00

## Gates, Molasses—

Stebbin's Pattern.....75@75&10%
Stebbin's Genuine.....60&10&10%
Stebbin's Tinned Ends.....40&10%
Chase's Hard Metal.....50&10%
Bush's.....20%
Lincoln's Pattern.....70@70&10%
Weed's.....20&10%
Boss, ₱ doz:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10.....60&10&10%

**Gauges**

Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Scratch. 25&10%
Wire, low list.....10&10%
Wire, Wheeler, Madden & Co.....10%
Wire, Morse's.....50@50&5%
Wire, Brown & Sharpe's.....10@20%
Wire, P. S. & W. Co.....

**Gimlets—**

Nail and Spike.....50&10&5%
"Eureka" Gimlets.....40&10%
"Diamond" Gimlets.....₱ gr $5.00
Double Cut, Shepardson's.....45@45&5%
Double Cut, Ives'.....60@60&5%
Double Cut, Douglass'.....40&10%
"Bee," ₱ gr $12.....25@25&5%

**Glue—**

Le Page's Liquid.....25@25&5%
Upton's Liquid.....35%
Le Page & Co.'s Improved Process 25@25&5%

**Glue Pots**—See Pots, Glue.

**Grease, Axle.**

Fraser's.....Keg ₱ lb 4¢, Pail ₱ lb 5¢
Fraser's, in boxes.....₱ gr $9.50
Dixon's Everlasting, in bxs...₱ doz 1 lb $1.20; 2 lb $2.00
Dixon's Everlasting....10-lb pails, ea. 35¢
Lower grades, special brands, ₱ gr $5.50@$7.00

**Grindstones—**

Small, at factory.....₱ ton $7.50@9.00

**Grindstone Fixtures**—See Fixtures, Grindstone.

## Hack Saws—See Saws.

**Hafts, Awl.**

Sewing, Brass Fer. ₱ gr, $3.50.....45&10%
Pat. Sewing, Short.$1.00 ₱ doz.....40&10%
Pat. Sewing, Long.....₱ doz $1.20
Pat. Peg, Plain Top.₱ gr $10.00...45&10%
Pat. Peg, Leather Top.₱ gr $12.00.45&10%

**Halters.**

Covert's, Rope, ½-in. Jute..... 50&2%
Covert's, Rope, ½-in. Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&2%
Covert's Jute Horse and Cattle Ties, 60&10&2%

**Hammers—**

*Handled Hammers—*
Maydole's, list Dec. 1, '85.. ....25&10@35%
Buffalo Hammer Co.... } List Jan. 15, '87
Humason & Beckley... } 50@50&10%
Atha Tool Co..... }
Fayette R. Plumb.....50@50@10%
C. Hammond & Son..List, Oct., 1889, 50@50@10%
Hartford Hammer Co.....50@50@10%
Verree.....5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles.....20@25
Peck, Stow & Wilcox.....40%
Sargent's.....33⅓&10%

*Heavy Hammers and Sledges—*
3 lb and under.... ₱ lb 40¢
3 to 5 lb.....₱ lb 36¢ 70@70&10%
Over 5 lb.....₱ lb 30¢
Wilkinson's Smiths.....10½¢@11¢₱ lb

**Handcuffs and Leg Irons**—See Police Goods,

**Handles—**

*Cross-Cut Saw Handles—*
Atkins' No. 1 Loop, ₱ pair, 28¢; No. 3 18¢; No. 6, 16¢; No. 2 and No. 4 Reversible, 18¢.
Boynton's Loop Saw Handles, 50¢....60%
Champion.....15

*Iron, Wrought or Cast—*
Door or Thumb.

| Nos..... | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| Per doz.... | $0.90 | 1.00 | 1.18 | 1.35 | 1.50 |

60&10&10%

Roggin's Latches.....₱ doz 30¢@35¢
Bronze Iron Drop Latches..₱ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no Plate, $0.88 ..... net
Barn Door, ₱ doz $1.40..... 10&10%
Chest and Lifting.....70%

*Wood—*

Saw and Plane.....40&10@40&10&5%
Hammer, Hatchet, Axe, Sledge, &c...40%
Brad Awl.....₱ gr $2.00
Hickory Firmer Chisel, ass'd. ₱ gr 4.50
Hickory Firmer Chisel, large. ₱ gr 5.00
Apple Firmer Chisel, ass'd...₱ gr 5.00
Apple Firmer Chisel, large...₱ gr 6.00
Socket Firmer Chisel, ass'd..₱ gr 3.00
Socket Framing Chisel, ass'd. ₱ gr 5.00
J. S. Smith & Co.'s Pat File.....3.50
File, assorted..... ₱ gr ₱ 75 } 40&
Auger, assorted..... ₱ gr 5.00 } 40&10
Auger, large..... ₱ gr 7.00 }
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass..... ₱ set $1.25
Pat. Auger, Swan's ..... ₱ set $1.00
Hoe, Rake, Shovel, &c. .....50&10 %

**Hangers—**

Barn Door, old patterns...60&10&10@70%
Barn Door, New England...60&10&10@70
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Wood Track.....55%
U. S. Wood Track .....65%
Champion.....60&10%
Rider and Wooster, Medina Mfg. Co.'s list.....70%
Climax Anti-Friction.....60%
Climax Anti-Friction for Wood Track55%
Zenith for Wood Track.....55%
Reed's Steel Arm.....50%
Challenge, Barn Door.....50%
Sterling's Imp'ved (Anti-Friction).65&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Chantree .....50&10%
Kidder's .....50&10@60%
The Boss.....60&10%
Best Anti-Friction.....60&10%
Duplex (Wood Track).....60&10&5%
Terry's Pat., ₱ doz pr. 4 in, $10.00; 5 in. $12.00.....58&10%
Terry's Steel Anti-Friction Leader 50&10%
Terry's Steel Anti-Friction Ideal..50&10%
Cronk's Patent, Steel Covered.....50@5%
Wood Track Iron Clad, ₱ ft. 10¢.....50 &15@60%
Carrier Steel Anti-Friction.....50@50&5%
Architect, ₱ set $6.00..... .20%
Eclipse.....20&10%
Felix, ₱ set $4.50.....20%
Richards'.....30@30&10%
Lane's Standard.....50&5@50&10%
Lane's New Standard.....50@50&5%
Ball Bearing Door Hanger..20&10@25&10%
Warner's Pat.....20@20&10%
Stearns' Anti-Friction.....20@20&10%
Stearns' Challenge.....25&10@25&10&10%
Faultless.....40@40&5%
American, ₱ set $6.00.....20&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢..... .40%
Paragon, Nos. 1, 2 and 3 .....40&10%
Cincinnati.....25&10%
Paragon, Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel Cast Iron..... .50%
Nickel, Malleable Iron and Steel .....40%
Scranton Anti-Friction Single Strap33⅓%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00.....45%
Star .....40&10@40&10&5%
May .....50&5@50&10%
Barry, $6.00..... .40&10%

**Harness Snaps**—See Snaps.

**Hatchets—**

List Jan. 1, 1886.
Isaiah Blood.....35@40%
Hunt's Shingling, Lath and Claw. 40&5%
Hunt's Broad.....40%
Buffalo Hammer Co.....40&10&50%
Hurd's.....40&10&50%
Fayette R. Plumb.....40&10&50%
Wm. Mann, Jr., & Co.....50@50&5%
Underhill Edge Tool Co....40&5@40&10%
Underhill's, Haines and Bright.... 33⅓%
C. Hammond & Son... .....40&10@50%
Simmons'.....40&10@50%
Peck's.....40&10@40&10&5%
Kelly's.....50@50&5%
Sargent & Co.....50%
P. S. & W. Co .....50%
Ten Eyck Edge Tool Co.40&10@40&10&5%
Collins.....10%
Schulte, Lohoff & Co. .....50@50&5%

**Hay and Straw Knives**—See Knives.

**Hinges—**

*Blind Hinges—*

Parker.....75&2%
Palmer.....50&5&10%
Seymour .....70&2%
Nicholson.....45&10%
Huffer .....50%
Clark's, Nos. 1, 3, 5, 40 and 50 75&10&5@80%
Clark's Mortise Gravity..... ...50%
Sargent's, Nos. 1, 3, 5, 11, 13 75&10@55&10&5%
Sargent's, No. 12.....77&10&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible....70&10&5@75%
Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $10.50; No. 3, for Brick, $13.50. ..... .25&2%

*Gate Hinges—*

Western..... ₱ doz $4.40, 60%
N. E..... ₱ doz $7.00, 55%
N. E. Reversible..... ₱ doz $5.20, 55&10%
Clark's, Nos. 1, 2, 3.....60&10&5%
N. Y. State..... ₱ doz $5.00, 55&10%
Automatic ..... ₱ doz $12.50, 50%
Common Sense..... ₱ doz pair $4.50, 50%
Seymour's..... 45&10%
Shepard's ..... 60&10&5%
Reed's Latch and Hinges. ₱ doz $12.00, 50%

*Spring Hinges—*

Geer's Spring and Blank Butts.....40%
Union Spring Hinge Co.'s list, March, 1886 ..... .20%

Acme..... .30%
J. S. .....25&10%
Empire and Crown.....20%
Hero and Monarch .....55%
American, Gem, and Star..... .30%
Oxford..... .20%
Barker's Double Acting..... 20&10%
Union Mfg. Co.....25%
Dommer's..... .30%
Buckman's.....15@20%
Chicago..... .30%
Wiles'..... .10%
Devore's..... .40%
Rex..... .40%
Royal..... .60%
Reliable..... .60%
Champion..... .60%
Bardsley's Patent..... .40%

*Wrought Iron Hinges*

Strap and T.....70&10%
Screw Hook and Strap..... { 6 to 12 in., ₱ lb. .4 2-10¢ / 14 to 20 in., ₱ lb. .3 7-10¢ / 22 to 36 in., ₱ lb. .3 2-10¢
Heavy Welded Hook..... { 6 to 12 in., ₱ lb. .4 2-10¢ / 14 to 20 in., ₱ lb. .3 7-10¢ / 22 to 36 in., ₱ lb. .3 2-10¢
Screw Hook and Eye { ½ in., ₱ doz $1.50 / ⅝ in., ₱ doz $2.45 / ¾ in., ₱ doz $3.80 } 10%
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised..... .70&10%
Plate Hinges "Providence" { 8, 10 & 12 in., ₱ lb. ....5¢ / over 12 in., ₱ lb. ....4¢

**Hoes—**

*Eye—*

D. & H. Scovil.....20%
Lane's Crescent Planters Pattern..45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat. 60&5@60&10%
Hubbard & Co., S. & O. Pat.60&5@60&10%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub..... .60@60&10%

*Handled—*

Garden, Mortar, &c.....70%
Planter's, Cotton, &c..... .70%
Warren Hoe..... .60%
Magic..... ₱ doz $4.00

**Hog Rings and Ringers**—See Rings and Ringers.

**Hoisting Apparatus**—See Machines, Hoisting.

**Hollow-Ware**—See Ware, Hollow.

**Holders.**

*Bag.*

Sprengle's Pat.....₱ doz $18.....60%

*Bit.*

Extension,
Barber's, ₱ doz $15.00.....40@40&10%
Ives, ₱ doz $20.00.....60&5@60&10%
Diagonal..... ₱ doz $24.00, 40%
Angular..... ₱ doz $24.00, 40&5%

*File and Tool—*

Bals Pat.....₱ doz $4.00; 25%
Nicholson File Holders..... 20%

**Hooks—**

*Cast Iron—*

Bird Cage, Sargent's list.....
Bird Cage, Reading..... } 60&10&10%
Clothes Line, Sargent's list..
Clothes Line, Reading list. 60&10@60&10&10%
Ceiling, Sargent's list. .....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading.50&10@50&10&10%

*Wrought Iron—*

Cotton.....₱ doz $1.25
Cotton Pat. (N.Y. Mallet & Handle W'ks). 30%
Tassel and Picture (T. & S. Mfg. Co.)...50%
Wrought Staples, Hooks, &c. See Wrought Goods.

*Wire—*

Wire Coat and Hat, Gem, list April, 1886.....50%
Wire Coat and Hat, Miles', list April, 1886.....50%
Indestructible Coat and Hat.....45%
Wire Coat and Hat, Standard.....45%
Handy Hat and Coat. .....50&10%
Steady Ceiling Hooks.....50&10%
Belt. .....80@80&10%

*Miscellaneous.*

Grass, No. 2, $2.00; No. 3, $2.25; No. 4, $2.50
Nolin's Grass.....₱ doz $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American..... 50%
Bench Hooks .....See Bench Stops.

**Horse Nails**—See Nails, Horse.

**Horse Shoes**—See Shoes, Horse.

**Hose, Rubber—**

Competition..... ...75&10@75&10&5%
Standard..... ..70@70&10%
Extra..... 6C@60&10%
N. Y. B. & P. Co., Para..... .30&10%
N. Y. B. & P. Co., Extra..... 50%
N. Y. B. & P. Co., Dundee.....60&10&5%

**Huskers—**

Blair's Adjustable..... ....₱ gr $8.00
Blair's Adjustable Clipper... ..₱ gr 7.00
Hubbard's Solid Steel..... ₱ gr 4.50

**Indurated Fiber-Ware**—See Ware, Indurated Fiber.—

**Irons.**

*Sad—*

From 4 to 10, at factory ...₱ 100 lb. $2.60@$2.75
Self-Heating.....₱ doz $9.00 net
Self-Heating, Tailors'....₱ doz $18.00 net
Gleason's Shield and Toilet. .....25%
Mrs. Pott's Irons..... .....40@40&10%
Enterprise Star Irons . .....40%
Combined Fluter and Sad Iron, ₱ doz, $15.00.....15%
Fox Reversible, Self-Fluter ₱ doz $24.00
Chinese Laundry (N.E. Butt Co.) 8½¢, 15%
New England..... 8¢, 15%
Mahony's Troy Pol. Irons..... .25%
Sensible..... .20@20&5%
National Self-Heating..... .30 %

*Soldering—*

Soldering Coppers..... ₱ lb 22 @ 23¢
Covert's Adjustable, list Jan. 1, 1886. 35&2%

**Irons,** Pinking, per doz., 65¢.

**Jack Screws**—See Screws.

**Jacks, Wagon.**

Daisy..... .....25%

**Kettles—** Spun. Stamped.
Brass, 7 to 17 in., ₱ lb.... 24¢ 21 ¢
Brass larger than 17 in., ₱ lb..... 26¢ 23½¢
Enameled and Tea—See Hollow-Ware.

**Keys—**

Lock Asso'n list Dec. 30, 1886...50&10@ 60&5%
Eagle, Cabinet, &c ..... .33⅓&2%
Hotchkiss' Brass Blanks..... .40%
Hotchkiss, Copper and Tinned..... .40%
Hotchkiss' Pad. and Cab..... .35%
Ratchet Bed Keys..... ₱ doz $4.00, 15%
Wollensak Tinned..... .50&10%

**Knife Sharpeners**—See Sharpeners, Knife.

**Knives.**

*Butcher, Shoe, &c—*

Wilson's Butcher Knives.....25@30%
Ames' Butcher Knives .....25%
Foster Bros.' Butcher, &c..... .40%
Nichols' Butcher Knives.....40&10%
Ames' Shoe Knives..... .....20@25%
Ames' Bread Knives. ₱ doz $1.50, 15@20%
Moran's Shoe and Bread..... .20%
Hay and Straw .....See Hay Knives.
Table and Pocket..... .See Cutlery.
Corn, Auburn Mfg. Co. Western Pat., $2.00
Corn, Auburn Mfg. Co. Crescent.....$3.50

*Corn—*

Bradley's..... .....10%
Wadsworth's..... .....25%

*Drawing—*

Witherby
P. S. & W .....
Mix .....
New Haven..... } ..75 @ 75&10 %
Merrill .....60&10@60&10&5%
Douglas..... .....75@75&5%
Watrous..... .....15&10@25%
L. & I. J. White..... .....20&5%
Bradley's..... .....35%
Adjustable Handle..... .....25@33⅓%
Wilkinson's Folding..... .....25@25&5%

*Hay and Straw—*

Lightning. Mfrs'. price ₱ doz $18.00, 25% But jobbers cut this price freely, often selling at $8 @ $8.50.
Wadsworth's..... .....40&7½@40&10%
Carter's Needle..... ₱ doz $11.50@$12.00
Heath's..... ₱ doz $13.50@14.00
Auburn Hay, Com. and Spear Point..50%
Auburn, Straw..... .....40%
Nolin's Hay ..... ₱ doz $10.00

*Mincing.*

Am. (2d quality), ₱ gr., 1 blade blades, $12; 3 blades, $18.....net
Lothrop's..... .....20&10%
Smith's, ₱ doz, Single, $2.00; Double, $3. 40@45%
Knapp & Cowles..... .....50&10@60%
Buffalo Adjustable..... ₱ doz $3.00 .25%
Buffalo Double Adj'table, ₱ doz $3.00 25%

**Knobs—**

Door Mineral..... .....60@65%
Door Por. Jap'd..... .....70@75%
Door Por. Nickel..... .....$2.00@2.25
Door Por. Plated, Nickel..... $2.00@2.25
Drawer, Porcelain.....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885...40%
Furniture Plain.....75¢ gro inch, 10%
Furniture, Wood Screws.....25&10%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's..... .....70&10%
Picture, Hemacite..... .....35&5%
Shutter, Porcelain..... .....65&10%
Carriage, Jap..... ₱ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c..40%

**Ladies.—** Melting, Sargent's.....55&10%
Melting, Reading. .....35&10%
Melting, Monroe's Pat...₱ doz $4.00, 40%
Melting, P. S. & W .....35&10@40%
Melting, Warner's..... .....30%

**Lanterns—**

*Tubular—*

Plain with Guards, ₱ doz.....$4.00@4.25
Lift Wire, with Guards.....$4.50@4.75
Square Plain, with Guards....$4.00@4.25
Sq. Lift Wire, with Guards...$4.25@4.50
Without Guards, 25¢ ₱ doz less.

*Miscellaneous.*

Police, Small, $6.00; Medium, $7.25; Large, $9.75..... .....20@25%

**Lawn Mowers**—See Mowers, Lawn.

**Leaders, Cattle.**

Humason. Beckley & Co.'s.....70%
Sargent's..... .....60%&10%
Hotchkiss..... .....30%
Peck, Stow & W. Co..... . 60&10%

**Lemon Squeezers**—See Squeezers, Lemon.

**Lifters, Transom.**

Wollensak's:
Class 3 and 4, Bronzed Iron.....50%
Class 3 and 4, Bronze Metal.....25%
Class 3 and 4, Brass.....35%
Skylight Lifters.....35%
Crown, Eagle and Shield.....50%
Belher's, list Aug. 1, 1889-
Bronzed Iron Rods.....50&10&10&2%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's Universal.....40@40&10%

**Lines—**

Cotton and Linen Fish, Draper's.....50%
Draper's Chalk.....60%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25..... .25%
Cotton Chalk..... .55%
Samson, Cotton, No. 4, $2; No. 4½, $2.5); No. 5, $3.00..... .10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gro..... .25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50.....
Mason's Colored Cotton..... .....45%
Wire Clothes.. Nos. 1P 19 20
100 ft. ..... .... $4 00 $3 50 $3.00
Ventilator Cord, Samson Braided, White or Drab Cotton..₱ doz $7.50, 20%

**Locks, &c.—**

*Cabinet—*

Eagle, Gaylord Parker and Corbin... } List March, '84, rev Jan. 1, '85 ..33⅓&2%
Deitz, Nos. 36 to 39..... .....40%
Deitz, Nos. 51 to 63..... .....40&10%
Deitz, Nos. 86 to 96..... .....30%
Stoddard Lock Co..... .....30&33⅓%
"Champion" Night Latches..... .....40%
Barnes Mfg. Co..... .....40@40&10%
Eagle and Corbin Trunk..... .....25&2%
"Champion" Cab. and Combin...33⅓%
Yale..... .....net prices
Romer's..... .....25%

*Door Locks, Latches, &c.*

R. & E. Mfg. Co., list Mar. 20, 1889..... } 60&10@60 &10&10
Mallory, Wheeler & Co., list July, '88..... } Much
Sargent & Co., list Aug. 1, '88 } lower net
Reading Hardware Co., list Feb. 2, '88..... } prices often made.
Brittan, Graham & Mathes, list Jan. 1890..... .60&10&10%
Perkins' Burglar Proof..... .....60&25%
Plate..... .....33⅓&2%
F. Many's "Extension Cylinder" $10.50 ₱ doz.
Barnes Mfg. Co..... .....40@40&10%
Yale..... .....net prices
Deitz Flat Key..... .....30%
L. & C. Round Key Latches..... .....30&10%
L. & C. Flat Key Latches..... .....33⅓&10%
Romer's Night Latches..... .....15%
Shepardson or U. S..... .....35%
Felter or American..... .....40&10%
Seed's N. Y. Hasp Lock..... .....25%

*Padlocks—*

List Dec. 23, '84. .....75@75&10%
Brittan, Graham & Mathes..... 75&10%
Yale Lock Mfg. Co.'s.....net prices
Eagle..... .....25&2%
Eureka, Eagle Lock Co..... .....40&2%
Romer's, Nos. 0 to 91..... .....30%
Romer's Scandinavian, &c., Nos. 100 to 505..15%
A. E. Deitz..... .....40%
Champon Padlocks..... .....40%
Hotchkiss..... .....30%
Star..... .....45%
Horseshoe..... ₱ doz, $9, 40&10&10%
Barnes Mfg. Co..... .....40@40&10%
Nock's..... .....30%
Brown's Pat..... .....25%
Scandinavian..... .....90@90&10%
E. T. Fraim's Keystone Scandavian: Nos. 119, 120, 130 and 140..... .90&10%
Other Nos..... .....65%
Ames Sword Co. up to No. 150..... .....40%
Ames Sword Co. above No. 150..... .....50%

*Sash, &c.*

Clark's, No. 1, $10; No. 2, $8 ₱ gr.. .33⅓%
Ferguson's..... .....33⅓%
Morris and Triumph, list Aug. 16, 1886, 60&2%
Victor..... .....60&10&2%
Walker's..... .....10%
Attwell Mfg. Co..... .....25&33⅓%
Reading..... .....60%&10@60%&10&10%
Hammond's Window Springs..... .....40%
Common Sense, Jap'd, Cop'd and Br'zed..... ₱ gr $4.00
Common Sense, Nickel Plated ₱ gr $10.00
Universal..... .....30%
Kempshall's Gravity..... .....60%
Kempshall's Model..... .....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect..... .....60@60&10%
Hugunin's Sash Balances..... .....25&5&2%
Hugunin's New Sash Locks..... .....25&5&2%
Stoddard "Practical"..... .....10%
Ives' Patent..... .....60@60&10%
Lieschе's, Nos. 100 and 110, ₱ gr $8; 105, $10.00. ..... .....20&10%
Davis, Bronze, Barnes Mfg. Co..... 50%
Champion Safety, list March 1, 1888 55@55&5%
Security..... .....70%
Buckeye..... ₱ gro $4.80

**Lumber Tools**—See Tools, Lumber.

**Lustre—**

Four-ounce Bottles....₱ doz, $1.75; ₱ gross..... .....$17.00

**Machines.**

| | Without Augers. | Upright. | Angular. |
|---|---|---|---|
| *Boring—* | | | |
| Douglas..... | $5.50 | $6.75 | .....50% |
| Snell's, Rice's Pat. | 5.50 | 6.75 | ...40&10&10 |
| Jennings ..... | 5.50 | 6.75... | 45@45&10 |
| Other Machines... | 2.35 | 2.75... | ..... net |
| Phillips' Patent with Augers ... | 7.00 | 7.50 | ... |

*Fluting.*

Knox, 4½-inch Rolls .....$3.25 each } 35%
Knox, 6-inch Rolls.. .....$3.60 each }
Eagle, 3½-inch Roll, $2.15..... .....35%
Eagle, 5½-inch Roll, $2.85..... .....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each ..... .....35%
Crown Jewel, 6 in ..... .....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each..... .....35%
Domestic Fluter ..... .....each, $1.50
Geneva Hand Fluter, White Metal ₱ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00. ..... .....30%
Shepard Hand Fluter, No. 85 ₱ doz $15.30..... .....40%

Shepard Hand Fluter, No. 110 ₱ doz $11.00.....40%
Shepard Hand Fluter, No. 95 ₱ doz $8.00.....40%
Clark's Hand Fluter. ₱ doz $15.00.....35%
Combined Fluter and Sad Iron, ₱ doz $15.00 .....30%
Buffalo .....₱ doz $10.00 .....10%

*Hoisting—*
Moore's Hand Hoist, with Lock Brake.....20%
Moore's Differential Pulley Block.....40%
Energy Mfg. Co's.....25%

**Mallets.**

Hickory .....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. 30@30&10%

**Mattocks.** Regular list..... .....60&5%

**Measures—**

Standard Fiberware, No. 1, peck, ₱ dozen, $4; ½-peck, $3.50.

**Meat Cutters**—See Cutters, Meat.

**Mills.**

*Coffee—*
Box and Side, List Jan. 1, 1888.....60&2%
American, Enterprise Mfg Co.20&10@30%
The Swift, Lane Bros.....20&10%

**Mincing Knives** — See Knives, Mincing.

**Molasses Gates**—See Gates, Molasses.

**Money Drawers** — See Drawers, Money.

**Mowers, Lawn.**

Leading makers.....60@60&10%
Other makers.....60&10&5@60&10&10%

**Muzzles—**

Safety.....₱ doz. $3.00, 25 %

## Nails.

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, July 15, 1889....70&5%
Tack Mfrs.' list.....60&10&10%
Wire Nails, Standard Penny.
Card June 1, '89, base.....$2.90 @ $3.00

*Horse—*

| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Ausable | 28¢ | 26¢ | 25¢ | 24¢ | 23¢. | 25&10@25&10&10% |
| Clinton, Fin. | | | | | | 10½ @ 11¢, net |
| Essex | 28¢ | 26¢ | 25¢ | 24¢ | 23¢. | 25&10@25&10&10% |
| Lyra | 25¢ | 23¢ | 22¢ | 21¢ | 20¢. | 40&10&5@50% |
| Snowden | 25¢ | 23¢ | 22¢ | 21¢ | 20¢. | 40&10&5@50% |
| Putnam | 23¢ | 21¢ | 20¢ | 19¢ | 18¢. | 1000 ₱ in year 15% |
| Vulcan | 23¢ | 21¢ | 20¢ | 19¢ | 18¢. | 12½&5% |
| Northwest'n | 25¢ | 23¢ | 22¢ | 21¢ | 20¢. | 25@25&5% |
| Globe | 23¢ | 21¢ | 20¢ | 19¢ | 18¢. | 20&2½% |
| Boston | 23¢ | 21¢ | 20¢ | 19¢ | 18¢. | 20&2½% |
| A. C. | 25¢ | 23¢ | 22¢ | 21¢ | 20¢. | 25&10@33½&5% |
| C. B.-K | 23¢ | 23¢ | 22¢ | 21¢ | 20¢. | 25&10@33½&5% |
| Champlain | 28¢ | 6¢ | 25¢ | 24¢ | 23¢. | 25&10&10% |
| New Haven | 28 | 26¢ | 25¢ | 24¢ | 23¢. | 25&10@25&10&10% |
| Saranac | 23¢ | 21¢ | 20¢ | 19¢ | 18¢. | 30&10% |
| Champion | 25¢ | 23¢ | 22¢ | 21¢ | 20¢. | 10&10&10% |
| Capewell | 28¢ | 26¢ | 5¢ | 24¢ | 23¢. | 35&5@35&10% |
| Star | 23¢ | 21¢ | 19¢ | 18¢. | | 10&10@10&12½% |
| Anchor | 23¢ | 21¢ | 20¢ | 19¢ | 18¢ | 35% |
| Western | 23¢ | 21¢ | 20¢ | 19¢ | 18¢. | 40&10% |

Empire Bronzed. .....14 ₱ ₱.

*Picture—*
Brass Head, Sargent's list.....50&10&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list.50&10&10%
Porcelain Head, Combination list..40&10%
Niles' Patent.....40%

**Nail Pullers.**—See Pullers, Nail.

**Nail Sets.**—See Sets, Nail.

**Nut Crackers.**—See Crackers, Nut.

**Nuts—**

Nuts, off list Dec. 18,1889: Square. Hex.
Hot Pressed..... 4¾¢ 5¼¢
Cold Punched..... 5 ¢ 5½¢
In lots less than 100 ₱, ₱ ₱. add ½¢; 1-₱ boxes, add 1¢ to list.

## Oakum—

Government. .....₱ ₱ 7½@7¾¢
U. S. Navy.....₱ ₱ 6¾@6¾¢
Navy..... .....₱ ₱ 5½¢@5¾¢

**Oilers—**

Zinc and Tin .....65@65&10%
Brass and Copper .....50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.00; No. 2, $4.00; No. 3, $4.40 ₱ doz. 10@10&5%
Malleable, Hammers, Old Pattern, same list .....40%
Prior's Pat. or "Paragon" Zinc, 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper .....50%
Broughton's Zinc.....60%
Broughton's Brass .....50%
Gem P. D. & Co. .....₱ gro. $2
Steel, Draper and Williams.....50%

**Openers, Can.**

Messenger's Comet.....₱ doz $3.00, 25%
American.....₱ gross $3.00
Duplex.....doz 25¢, 15@20%
Lyman's.....₱ doz $3.75, 20%
No. 4 French.....₱ doz $2.25, 55@60%
No. 5, Iron Handle.....₱ gr $6.00, 45&50%
Eureka.....₱ doz $2.50, 10%
Sardine Scissors.....₱ doz $2.75@3.00
Star.....₱ doz $2.75
Sprague, No. 1, $2.00 2, $2.25; 3, $2.50 50&10&10%
World's Best, ₱ gross, No. 1, $12.00 No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ₱ doz $3.00..... .....35& 5%
Domestic, ₱ doz $2.50..... .....40%
Champion ₱ doz $2.00 ..... . ..... %

## Packing, Steam—

*Rubber—*
Standard .....60&10@60&10&10%
Extra .....50&10@60%
N. Y. B. & P. Co., Standard ...50&10&5%
N. Y. B. & P. Co., Empire .....70%
N. Y. B. & P. Co., Salamander. ₱ ₱ 65¢, 30%
Jenkins' Standard.....₱ ₱ 80¢, 35%

*Miscellaneous—*
American Packing.....10¢@11¢ ₱ ₱
Russia Packing .....14¢ ₱ ₱
Italian Packing .....13¢@14¢ ₱ ₱
Cotton Packing .....15¢@17¢ ₱ ₱
Jute.....7¢@8¢ ₱ ₱

**Padlocks**- See Locks.

**Parers.**

*Apple.*
Advance.....₱ doz $4.75
Antrim Combination.....₱ doz 5.50
Baldwin.....₱ doz 5.25
Champion.....₱ doz 7.25
Daisy.....₱ doz 4.00
Eureka, 1888.....each 17.00
Family Bay State.....₱ doz 12.00
Favorite.....₱ doz 5.00
Gem.....₱ doz 5.25
Gold Medal.....₱ doz 4.00
Ideal.....₱ doz 4.00
Improved Bay State.....₱ doz 30.00
Little Star.....₱ doz 4.50
Monarch.....₱ doz 13.50
New Lightning.....₱ doz 5.50
Oriole.....₱ doz 4.00
Penn.....₱ doz 4.00
Perfection.....₱ doz 4.00
Pomona.....₱ doz 4.00
Rocking Table.....₱ doz 6 00
Turntable.....₱ doz 4.50
Victor.....₱doz 13.50
Waverly.....₱ doz 4.00
White Mountain.....₱ doz 4.50
72.....₱ doz 4.25
76.....₱ doz 5.75
78.....₱ doz. 6.50

*Potato—*
White Mountain .....₱ doz $5.00@5.50
Antrim Combination.....₱ doz $8.00
Hoosier.....₱ doz $13.50

**Pails.**

*Galvanized Iron—*

| Quarts | 10 | 12 | 14 |
|---|---|---|---|
| Hill's Light Weight, ₱ doz. | $2.75 | 3.00 | 3.25 |
| Hill's Heavy Weight, ₱ dz. | 3.00 | 3.25 | 3.75 |
| Whiting's | 2.75 | 3.00 | 3.25 |
| Sidney Shephard & Co.... | 2.94 | 3.15 | 3.57 |
| Iron Clad | 2.50 | 2.75 | 3.00 |
| Fire Buckets | 2.75 | 3.25 | 3.50 |

Buckets, see Well Buckets.

*Indurated Fibre Ware—25%*
Star Pails, 12 qt .....₱ doz $6.00
Fire, Stable and Milk, 14 qt ..₱ doz $7.80

*Standard Fibre Ware—*

| | Plain. | Deer'd |
|---|---|---|
| Water Pails, 12 qt., per doz. | $4.00 | $4.50 |
| Dairy Pails, 14 qt., per doz. | 4.50 | 5.00 |
| Fire Pails, No.1, 12 qt. per doz | 4.50 | |
| Fire Pails, No.2, 14 qt. per doz | 5.00 | |
| Sugar Pails | 6.00 | 6.50 |
| Horse Pails | 5.60 | |
| Buggy Pails | 4.00 | |
| Slop Jars (bal. trap) | 8.00 | 9.00 |
| Chamber Pails, 14-qt | 6.50 | 7.50 |

**Pans.**

*Dripping.*
Small sizes. .....₱ ₱ 6½¢
Large sizes. .....₱ ₱ 5¾¢

*Fry—*
Standard List:

| No. | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| ₱ doz. | $3.00 | $3.75 | $4.25 | $4.75 | $5.25 |
| No. | | 5 | 6 | 7 | 8 |
| ₱ doz. | | $6.00 | $7.00 | $8.00 | $9.00 |

Polished, regular goods.....70&10%
Acme Fry Pans .....60&10%

**Paper and Cloth—**

*Sand and Emery—*
List April 19, 1886..... .....50@50&10%
Sibley's Emery and Crocus Cloth.....30%

**Pencils—**

Faber's Carpenters'..... ..high list 50%
Faber's Round Gilt.....₱ gro $5.25
Dixon's Lead..... .....₱ gro $4.50
Dixon's Lumber.....₱ gro $6.75
Dixon's Carpenters' ..... .....40&10%

**Picks—**

Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60@ 60&5%

**Picture Nails.**—See Nails, Picture.

**Pinking Irons.**—See Irons, Pinking.

**Pipe, Wrought Iron—**

List September 18, 1889.
1¼ and under, Plain .....47½%
1¼ and under, Galvanized .....40%
1½ and over, Plain.....6%
1¼ and over, Galvanized .....47½%
Boiler Tubes, Iron.
1¼ and under..... .....45%
2 to 4 inch.. .....50%
4-inch and larger.....52½%

**Pins.**

*Bow—*
Humason, Beckley & Co.'s... .....60&10%
Sargent & Co's....$17 and $18.....60&10%
Peck, Stow & W. Co.. 50&10@50&10&5%

*Curtain—*
Silvered Glass.....net
White Enamel.....net

*Escutcheon,*
Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

**Planes and Plane Irons—**

*Wood Planes—*
Molding.....45&2%
Bench, First Quality.. .....55&2%
Bench, Second Quality.....60&2%
Bailey's (Stanley R. & L. Co.).....40&10%

*Iron Planes—*
Bailey's (Stanley R. & L. Co.).....40@10%
Miscellaneous Planes (Stanley R & L. Co.) .....20&10%
Victor Planes (Stanley R. & L. Co.).20&10%
Steer's Iron Planes.....35@35&5%
Merrien Mal.Iron Co.'s.30&10@30&10&10%
via's Iron Planes .30&10@30&10&10%
Birmingham Plane Co.....50@50&5%
Gage Tool Co.'s Self-Setting.....20&10%
Chaplin's Iron Planes .....40@40&5%
Sargent's .....30&10@30&10&10%

*Plane Irons—*
Butcher's.....$5.00@$5.25 to 2
Buck Bros .....30%
Auburn "Thistle..... .....
Ohio.....
Landusky.....
S. & I. J. White.....25%

**Plates.**

Felloe .....₱ ₱ 6¢@6½¢

**Pliers and Nippers—**

Button's Patent.....30&10@40%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in. $21.00 ₱ doz .....20&10@33½%
Humason & Beckley Mfg. Co..50@50&10%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers .....40%
Russell's Parallel.....25%
P. S. & W. Cast Steel .....50%
P. S. & W. Tinners' Cutting Nippers, add 6% dis 10%
Carew's Pat. Wire Cutters.....20%
Morrill's Parallel, ₱ doz, $12.00....30&5%
Cronk's 8 in., $15.00; 10 in. $21.00, 40@40&5%

**Plumbs and Levels—**

Regular List .....70&10@70&10&10%
Disston's. ..... .....45&10%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....30%
Davis' Inclinometers ..... .....10&10%

**Poachers.**

*Egg.*
Buffalo Steam Egg Poachers, ₱ doz, No. 1, $6.00; No. 2, $9.00.....25%

**Police Goods.**

R. I. Tool Co., Handcuffs, $15.00₱ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ doz 10%
Tower's.....25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₱ doz $48.00; Nickeled, $57.00; 3 Hands, Polished, ₱ doz $72.00; Nickeled, $84.00..... 25%
J. P. Lovell's Police Goods..... 25%

**Polish, Metal.**

Prestoline.....20&10%
Prestoline Paste..... .....33⅓%
Gaston's Silver Compound.....33⅓%

**Pokes, Animal—**

Bishop's I. X. L.....₱ doz $6.00
Bishop's O. K..... .....₱ doz $5.25
Bishop's Pioneer..... .....₱ doz $3.75
Bishop's American..... .....₱ doz $2.75

**Polish, Stove.**

Joseph Dixon's.....₱ gro $6.00, 10%
Gem.....₱ gro $4.50, 10%
Gold Medal.....₱ gro $6.00, 25%
Mirror .....₱ pro $6.00, —%
Lustro .....₱ gro $4.75
Ruby.....₱ gro $3.75
Rising Sun, 5 gro lots ..... ₱ gro $5.50
Dixon's Plumbago..... ..₱ ₱ $5.00
Boynton's Noon Day, ₱ gro .....13.00
Parlor Pride Stove Enamel..₱ gro 3 cans
Yates' Liquid, 2 3 5 10 gal...8¢ ₱ gal ...$0.90 .80 .70 .60
Yates Standard Paste Polish, 10-₱ cans, ₱ ₱ 15¢
Jet Black .....₱ gro $3.50
Japanese.....₱ gro $3.50
Fireside.....₱ gro $2.50
Diamond O. K. Enamel.....₱ gro $19.00
Bonnell's Liquid Stove Polish..₱ gro $9.00
Bonnell's Paste Stove Polish..₱ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ₱ cans ..... 12½¢
Black Jack Water Paste, 5 and 10 ₱ cans .....12½¢
Nickel Plate Paste .....₱ gro $6.00

**Poppers, Corn—**

Round or Square, 1 qt..₱ gr $10.00@10.50
Round or Square, 1½ qt..₱ gr $15@15.50
Round or Square, 2 qt..₱ gr $18.50@19.00

**Post Hole and Tree Augers and Diggers**—See Diggers, Post Hole, &c.

**Potato Parers**—See Parers, Potato.

**Pots.**

*Glue—*
Tinned.....40%
Enameled.....40&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy" .....50%

**Presses.**

*Fruit and Jelly—*
Enterprise Mfg. Co.....20&10@30%
Henis .....₱ doz $2.50
Shepard's Queen City ..... . .....40%

**Pruning Hooks and Shears.**—See Shears.

**Pullers.**

*Nail.*
Curtiss Hammer..... .....₱ doz $9.00
Giant, No. 1.....₱ doz. $18.00, 10%
Giant, No. 2.....₱ doz, $15.00, 10%
Pelican.....₱ doz, $9.00, 25%

**Pulleys—**

Hot House, Awning, &c.....60&10%
Japanned Screw... ..... ..... 60&10%
Brass Screw.....60&10%
Japanned Side.....60¾&10%
Japanned Clothes Line.....60&10%
Empire Sash Pulley.....55@60%
Moore's Sash, Anti-Friction.....50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50.....50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70 .....50%
Hay Fork, "F" Common and Pat. Bushed .....20%
Hay Fork, Tarbox Pat. Iron.....20%
Hay Fork, Reed's Self-Lubricating ...60%
Shade Rack ..... .....45%
Tackle Blocks.....See Blocks
Moore's Anti-Friction 5 in. Wheel, ₱ doz $12.00..... .....40

**Pumps—**

Cistern, Best Makers .....60@60&10%
Pitcher Spout, Best Makers.....67½@70%
Pitcher Spout, Cheaper Goods.70@70&5%

**Punches—**

Saddlers' or Drive, good, ₱ doz...60@65¢
Bemis & Call Co.'s Cast Steel Drive..50&5%
Bemis&Call Co's Springfield Socket.50&5%
Spring, good quality....₱ doz $2.50@2.60
Spring, Leach's Pat.....15%
Bemis & Call Co.'s Spring and Check ..40%
Solid Tinners', P.S.&W.Co., ₱ doz$1.44, 55%
Tin'rs' Hollow Punches P.S.&W.Co.20&2%
Rice Hand Punches .....15%
Avery's Revolving.....40%
Avery's Saw-Set and Punch. See Saw Sets.

## Rail—

Sliding Door, Wr't Brass, ₱ ₱ 35¢.....15%
Sliding Door, Bronzed Wr't Iron..₱ ft. 7¢
Sliding Door, Iron, Painted, ₱ foot 4¢, 40%
Barn Door, Light. In. ½ ¾ ⅝
Per 100 feet.....$2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet....$2.15 2.70 3.25..net
Terry's Steel Rail, ₱ foot.....4½¢
Victor Track Rail, 7¢ ₱ foot.....50&2%
Carrier Steel Rail, ₱ foot .....4½¢
Moore's Wrought Iron.....25%

**Rakes—**

Cast Steel, Association goods .....70%
Cast Steel, outside goods 60&10&10@70&5%
Malleable..... 70@70&5%
Gibbs Lawn Rake.....$12.00, 50&1
Canton Lawn Rake..... $9.00, 50&1
Ft. Madison Prize Bow Brace and Peerless ..... 65%
Fort Madison Steel Tooth Lawn Rake, $6.00..... .....25%

**Razor**

J. R. Torrey Razor Co .....20%
Wostenholme and Butcher, $10.00 to £. 10%
Jordan's AaA1, list Nov. 1, 1889.....50%
Jordan's Old Faithful, list Nov. 1, '89.50%
Electric.....List net

**Razor Strops**—See Strops, Razor.

**Rings and Ringers.**

*Bull Rings—*
Union Nut Co. .....55%
Sargent's.....60⅝&10@70&5%
Hotchkiss' low list.....30@30&10%
Humason, Beckley & Co.'s.....70&10%
Peck, Stow & W. Co's..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%

*Hog—*
Top of the Hill Ringers.....₱ doz $2.00
Top of the Hill Rings.....₱ doz $1.25
Hill's Improved Ringers. ....₱ doz $4.25
Hill's Old Style Ringers.....₱ doz $2.75
Hill's Tongs. .....₱ doz $4.50
Hill's Rings.....₱ doz bxs $2.15@2.25
Perfect Rings.....₱ doz bxs $1.60@1.70
Perfect Ringers.....₱ doz $2.15@$2.25
Blair's Hog Ringers.....₱ doz $2.25@2.50
Blair's Hog Rings.....₱ doz 90¢@$1.00
Champion Ringers..... ₱ doz $2.00
Champion Rings, Double.....₱ doz $2.25
Brown's Ringers..... ....₱ doz $2.00
Brown's Rings.....₱ doz $1.25@1.90

**Rivets and Burrs—**

Iron, list Nov. 17, '87..... .....40%
Copper.....50@50&10%

**Rivet Sets**—See Sets.

**Rods—**

Stair, Brass .....25&2%
Stair, Black Walnut .. ..... ₱ doz 40¢

**Rollers—**

Barn Door, Sargent's list .....60&10&10%
Acme Moore's Anti-Friction.....55%
Union Barn Door Roller ..... .....70%

**Rope—**

Manufacturers' prices:
Manila...½ in. and larger ₱ ₱ 15 ¢
Manila .....⅜ in. ₱ ₱ 15½¢
Manila.....¼ and 5-16 in. ₱ ₱ 15¾¢
Manila Tarred Rope.....₱ ₱ 14½¢
Manila, Hay Rope.....₱ ₱ 15 ¢
Sisal...½ inch and larger ₱ ₱ 13 ¢
Sisal .....⅜ in. ₱ ₱ 12½¢
Sisal.....¼ and 5-16 in. ₱ ₱ 12¾¢
Sisal, Hay Rope. ... .....₱ ₱ 12 ¢
Sisal, Tarred Rope.....₱ ₱ 11½¢
Sisal, Medium Lathe Yarn.₱ ₱ 11 ¢
Cotton Rope. .....₱ ₱ 15@18¢ net
Jute Rope..... .....₱ ₱ 7½¢

1½% for cash in 10 days.

*Wire—*
List May 1, 1886.
Iron.....30%
Iron, Galvanized.....27½%
Cast Steel.....35%

**Rules—**

Boxwood..... .80&10&10@80&10&10&5%
Ivory..... .....50@50&10%
Starrett's Rules and Straight Edges, Steel..... .....25&10%

## Sad Irons—See Irons, Sad.

**Sand and Emery Paper and Cloth**—See Paper and Cloth, Sand and Emery.

**Sash Cord**—See Cord, Sash.

**Sash Locks**—See Locks, Sash.

**Sash Weights**—See Weights, Sash.

**Sausage Stuffers or Fillers—**

See Stuffers or Fillers, Sausage.

**Saws—**

Disston's Circular.....45@45&5%
Disston's Cross Cuts. .....45@45&5%
Disston's Hand 25@25&5%

Extras sometimes given by jobbers.

Atkins' Circular Shingle an Heading 50&10%
Atkins' Silver Steel Diamond X Cuts ₱ foot 70¢
Atkins' Special Steel Dexter X Cuts ₱ foot 50¢
Atkins' Special Steel Diamond X Cuts ₱ foot 30¢
Atkins' Champion and Electric Tooth X Cuts ₱ foot 24@25¢
Atkins' Hollow Back X Cuts ₱ foot 18¢
Atkins' Mulay, Mill and Drag 40&10%
Atkins' One-Man Saw, with handles, ₱ foot 32¢
W. M. & C., Hand 30&5@30&10%
W. M. & C., Champion X Cuts, Regular ₱ foot 24@36¢
W. M. & C. X Cuts, Thin Back ₱ foot 27¢@29¢
Peace Circular and Mill 45&10%
Peace Hand Panel and Rip 20&10@20&10&10%
Peace Cross Cuts, Standard ₱ foot 25¢
Peace Cross Cuts, Thin Back ₱ foot 27@28¢
Richardson's Circular and Mill 45@45&10%
Richardson's X Cuts, No. 1, 39¢; No. 2, 27¢; No. 3, 24¢

*Hack Saws—*
Griffin's, complete 40&10@50%
Griffin's Hack Saw, Blades 40&10@50%
Star Hack Saws and Blades 25%
Diamond Hack Saws and Blades 25%
Eureka and Crescent 25%

*Scroll—*
Lester, complete, $10.00 25%
Rogers, complete, $4.00 25%
Barnes' Builders' and Cabinet Makers', $15 25%
Barnes' Scroll Saw Blades 35%

**Saw Frames**—See Frames, Saw.

**Saw Sets**—See Sets, Saw.

**Saw Tools**—See Tools, Saw.

**Sets.**

*Awl and Tool.*
Aiken's sets, Awls and Tools, No. 20, ₱ doz $10.00 55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9. 25@25&10%
Miller's Falls Adj. Tool Hdls., Nos. 1, $12. 2, $18. 25%
Henry's Combination Haft ₱ doz $6.50
Brad Sets, No. 42, $10.50; No. 43, $12.50 70&10&5%
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50 30&10%

*Nail—*
Square ₱ gr., $4.00@$4.25
Round ₱ gr. $3.25
Buck Bros. 27½%
Cannon's Diamond Point ₱ gr.,$12, 20%

*Rivet.*
Regular list 50&10%

*Saw—*
Stillman's Genuine ₱ doz $5.00@7.75, 40&5%
Stillman's Imita ₱ doz $3.25@5.25, 40&5%40&10%
Common Lever ₱ doz $2.00, 40&5%
Morrill's No. 1, $15.00; Nos. 3&4, $24.00. 40&10%50%
Leach's No. 0, $8.00; No. 1, $15, 15@20%
Nash's 20&10@20&10&10%
Hammer, Hotchkiss $5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. Hammer 30&5%
Bemis & Call Co.'s Lever and Spring Hammer 30&5%
Bemis & Call Co.'s Plate 10%
Bemis & Call Co.'s Cross Cut 12½%
Aiken's Genuine $13.00, 50&10%
Aiken's Imitation $7.00, 55&5%
Hart's Pat. Lever 20%
Disston's Star, ₱, No. 15, $5.50; 20& 10@20&10@10%
Atkin's Lever, ₱ doz No. 1, $6.00; No. 2, $9.60
Atkin's Criterion ₱ doz $7.50
Croissant (Keller), No. 1, $15.00; No. 2, $24.00 40&10%
Avery's Saw Set and Punch 50%
Chieftain H. R. Co.'s Superior ₱ doz $15, 50%

**Scales**—

Hatch, Counter, No. 171, good quality, ₱ doz $21.00
Hatch, Tea, No. 161 ₱ doz $6.75@$7.00
Union Platform, Plain $2.10@$2.20
Union Platform, Striped $2.20@2.30
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka. 25%
Chatillon's Favorite 40%
Family, Turnbulls 30@30&10%
Riehle bros.' Platform 40%

**Scale Beams**—See Beams, Scale.

**Scissors, Fluting** 45%

**Scrapers—**

Adjustable Box Scraper (S. R. & L. Co.) $6.50 30&10%
Box, 1 Handle ₱ doz $4.00. 10%
Box, 2 Handle ₱ doz $6.00, 10%
Defiance Box and Ship 20&10%
Foot 50&10@50%
Ship, Common ₱ doz $3.50 net
Ship, R. I. Tool Co 10%

**Screen Window and Door Frames**—See Frames.

**Screw Drivers**—See Drivers, Screw.

**Screws.**

*Bench and Hand—*
Bench, Iron 55&10@55&10&10%
Bench, Wood, Beech ₱ doz $2.25
Bench, Wood, Hickory 20&10%
Hand, Wood 25&10@25&10&5%
Lag, Blunt Point, list Jan. 1, 1890. 75&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890 75%
Bed 25&5%
Hand Rail, Sargent's 66⅔&10%
Hand Rail, H. & B. Mfg. Co. 70&10@75%
Hand Rail, Am. Screw Co. 75%
Jack Screws, Millers Falls list. 50@50&5%
Jack Screws, P. S. & W 35%
Jack Screws, Sargent 60&10@60&10&5%
Jack Screws Stearns' 40@40&10%

*Cork—*
Humason & Beckley Mfg. Co. 40&10@50%
Williamson's 33⅓@33⅓&5%
Howe Bros & Hulbert 35%

*Machine—*
Flat Head, Iron 55%
Round Head, Iron 50%

*Wood—*
List March 1, 1889.
Flat Head Iron 50%
Round Head Iron 40%
Flat Head Brass 45%
Round Head Brass 35%
Flat Head Bronze 45%
Round Head Bronze 35%
Extra 5 @ 10 % often given.

**Scroll Saws**—See Saws, Scroll.

**Scythe Snaths**—See Snaths, Scythe.

**Sharpeners, Knife.**

Parkin s.
Applewood Handles ₱ doz $6.00, 40%
Rosewood or Cocobolo ₱ doz $9.00, 40%

**Shaves, Spoke.**

Iron 45%
Wood 30%
Bailey's (Stanley R. & L. Co.) 40&10%
Stearns' 20&10@30%
Cincinnati 25&10%

**Shears—**

American (Cast) Iron 75&10@75&10&5%
Pruning 75 Pruing Hooks and Shears.
Barnard's Lamp Trimmers ₱ doz $3.75
Tinners' 20&2%
Seymour's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's Tailor's Shears 33⅓%
First quality C. S. Trimmers. 80@80&10%
Second quality C. S. Trimmers. 80&10@80&10&10%
Acme Cast Shears 10&10%
Diamond Cast Shears 10%
Clipper 10&10%
Victor Cast Shears 75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel 40%
Chicago Drop Forge & F. Co., Solid Steel Forged 60%
Clauss Shear Co., Japanned 70%
Clauss Shear Co., Nickeled, same list. 60%
Electric List net

*Pruning Shears and Hooks.*
Disston's Combined Pruning Hook and Saw ₱ doz $18.00, 20&10%
Disston's Pruning Hook, ₱ doz $12.00, 20&10%
E. S. Lee & Co.'s Pruning Tools 40%
Pruning Shears, Henry's Pat, ₱ doz $3.75@4.00 net
Henry's Pruning Shears, ₱ doz $4.25@ 4.50 net
Wheeler, M. & C. Co.'s Combination, ₱ doz $12.00, 20%
Dunlap's Saw and Chisel, ₱ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2 7.25
P., S. & W. Co. 60%

*Tinners', &c.—*
Shears and Snips (P. S. & W.) 20@25%
Snips, J. Mallinson & Co 33⅓%

**Sheaves—**

*Sliding Door—*
M. W. Co., list July, 1888. 50&10@60&5%
R. & E., list Dec. 18, 1885. 55&20%
Corbin's list 60&10&2%
Patent Roller 60&10&2%
Patent Roller, Hatfield's 75%
Russell's Anti-Friction, list Dec. 18, 1885 60&2%
Moore's Anti-Friction 50%

*Sliding Shutter—*
R. & E. list Dec. 18, 1885 60&10&2%
Sargent's list 60&10%
Reading list 60&10&10%

**Ship Tools—**

L. & I. J. White 20&5%

**Shoes, Horse, Mule, &c.—**

*Horse—*
Burden's, Perkins', Phœnix, at factory. $4.00

*Mule—*
Add $1 ₱ keg to above prices.

*Ox, Wrought—*
Ton lots ₱ ℔ 9¢
1000 ℔ lots ₱ ℔ 9½¢
500 ℔ lots ₱ ℔ 10¢

**Shot—**

*(Eastern prices 2¢ off, cash, 5 days.*
Drop, ₱ bag, 25 ℔ $1.19
Drop, ₱ bag, 5 ℔ .29
Buck and Chilled, ₱ 25-℔ bag 1.44
Buck and Chilled, ₱ 5-℔ bag .34

**Shovels and Spades—**

Ames' Shovels, Spades, &c., list Nov. 1, 1885 20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron 50&10%
Griffith's C. S. 60@60&10%
Griffith's Solid C. S. R. R. Goods 20%
Old Colony (Sanford Fork & Tool Co) 35%
St. Louis Shovel Co. 20@20&7½%
Hussey, Binns & Co. 15@25%
Hubbard & Co. 20@20&7½%
Lehigh Mfg. Co. 50&10%
Payne Pettebone & Son, list January, 1886 30%
Remington's (Lowman's Pat.) 30&10@40%
Rowland's, Black Iron 50&10%
Rowland's Steel 60&5@60&10%

**Shovels and Tongs—**

Iron Head 60&10@60&10&5%
Brass Head 60&10&10%

**Sieves—**

Mann's Tin Rim 50&25%
Buffalo Metallic, S. S. & Co. 50&25%
Shaker (Barler's Pat.) Flour Sifters ₱ doz $2.00; ₱ gr $21.00
Electric ₱ gr $21.00
A. & W. Sifters ₱ doz 2.00
Hunter's ₱ doz $2.00
Smith's Adjustable Sifters ₱ doz $2.00
Smith's Adjustable Milk Strainer. ₱ doz $2.00
Smith's Adjustable T. & C. Strainer. ₱ doz. $1.25

*Sieves, Wooden Rim—*

| | Iron. | Plated. |
|---|---|---|
| Mesh 18, Nested, ₱ doz.. | 80¢ | $1.00 |
| Mesh 20, Nested, ₱ doz.. | 95¢ | 1.10 |
| Mesh 24, Nested, ₱ doz.. | $1.15 | 1.25 |

**Skeins, Thimble—**

Western list 75&5@75&10%
Columbus Wrt. Steel, list Jan. 3, 1889 45&10%
Coldbrookdale Iron Co. 50&10%
Utica P. S. T. Skeins 60%
Utica Turned and Fitted 35%

**Slates—**

School, by case 50@50&10%

**Snaps, Harness, &c.—**

Anchor (T. & S. Mfg. Co.). 65%
Fitch's (Bristol) 50&10%
Rockaway's 50%
Andrews 50%
Sargent's Patent Guarded 70&10&10%
German, new list 40&10%
Covert 50&2%
Covert, New Patent 50&5&2%
Covert, New R. E. 60@10&2%
Covered Spring 60&10&10%

**Snaths, Scythe.**

List 50&5&2@50&10&2%

**Soldering Irons**—See Irons, Soldering.

**Spittoons, Cuspidors, &c.**

*Standard Fiberware—*
Cuspidors, 8½-inch, ₱ doz., No. 5, $8; No. 5X $9.
Spittoons, Daisy, 8-inch, No. 1, $4; 10 and 11 inch, $6.

**Spoke Shaves**—See Shaves, Spoke.

**Spoke Trimmers**—See Trimmers, Spoke.

**Spoons and Forks—**

*Tinned Iron—*
Basting, Cen. Stamp. Co.'s list. 70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list 70&10%
Buffalo S. S. & Co. 33⅓&2%

*Silver-Plated—*(4 mos. or 5% cash 30 days).
Meriden Brit. Co., Rogers 40, 15, 10&5%
C. Rogers & Bros. 40, 15, 10&5%
Rogers & Bro. 40, 15, 10&5%
Reed & Barton 40&10%
Wm. Rogers Mfg. Co. 40, 15, 10, 5&5%
Simpson, Hall, Miller & Co. 40, 15, 10&5%
Holmes & Edwards Silver Co. 40, 15, 10, 5&5%
L. Boardman & Son 60%

*Miscellaneous.*
Holmes & Edwards Silver Co.:
No. 67 Mexican Silver 50&10&5%
No. 30 Silver Metal 50&10&5%
No. 24 German Silver 50&10&5%
No. 50 Nickel Silver 50%
No. 49 Coin Silver 50&10
German Silver 50@50&5
German Silver, Hall & Elton 50&5% cash
Nickel Silver 50&5@50&10&5% cash
Britannia 60%
Boardman's Nickel Silver 50&5% cash
Boardman's Britannia Spoons, case lots 60&5% cash

**Springs, Door.**

Torrey's Rod, regular size ₱ doz $1.80
Gray's, ₱ gr., $20.00 20%
Bee Rod ₱ gr., $20.00 20%
Warner's No. 1, ₱ doz, $2.50; No. 2, $3.30 40&10@50%
Gem (Coil), list April 19, 1886 10%
Star (Coil), list April 19, 1886 20%
Victor (Coil) 60@60&10%
Champion (Coil) 60&10@60&10&10%
Philadelphia, 5 in., $5.00; 8 in., $7.75 %
Cowell's No. 1, ₱ doz, $18.00; No. 2, $15.00 50%
Rubber, complete, ₱ doz, $4.50 55&10%
Hercules 50%
Shaw Door Check and Spring 25&30@35%
Elliptic, Concord, Platform and Half Scroll 60@60&5%
Cliff's Bolster Springs 25%

**Squares—**

Steel and Iron } 75&10@80%,
Nickel-Plated } full cs. ex. 10%
Try Square and T Bevels 60&10@60&10&10%
Disston's Try Square and T Bevels. 45&10%
Winterbottom's Try and Miter 30&10%
Starrett's Micrometer Caliper Squares. 25%
Avery's Flush Bevel Squares 40%
Avery's Bevel Protractor 50%

**Squeezers.**

*Fodder.—*
Blair's ₱ doz $2.00
Blair's "Climax" ₱ doz $1.25

*Lemon—*
Porcelain Lined, No. 1 ₱ doz $6.00, 25&30%
Wood, No. 2 ₱ doz $3.00, 35%
Wood, Common ₱ doz $1.70@1.75
Dunlap's Improved ₱ doz $3.75, 20%
Sammis, No. 1, $5.00; No. 2, $9; 12, $18 ₱ doz. 25&10%
Jennings' Star ₱ doz $2.50
The Boss ₱ doz $2.50
Dean's Nos. 1, ₱ doz $6.50; 2, $3.35; 3, $1.90
Little Giant 50@50&5%
King 40&5%
Hotchkiss Straight Flash ₱ doz $12.00

**Standard Fiber Ware**—See Ware, Standard Fiber.

**Staples.**

*Blind—*
Barbed, ½ in. and larger ₱ ℔ 7½@8¢
Barbed, ⅜ in. ₱ ℔ 8½@9¢
Fence Staples, Galvanized. } Same price as Brb Wire.
Fence Staples, Plain. } See Trd. Rep.

**Steelyards** 40&10@50%

**Stocks and Dies—**

Blacksmith's
Waterford Goods 30&5@30&10%
Butterfield's Goods 30&5@30&10%
Lightning Screw Plate 25@30%
Reece's New Screw Plates 33⅓&5@40%
Reversible Ratchet 30%
Gardner 25%

**Stops, Bench.**

Morrill's ₱ doz $9, 50%
Hotchkiss's ₱ doz $5, 10@10&10%
Weston's, No. 1, $10; No. 2, $9.25 10&5%
McGill's ₱ doz $3. 10%
Cincinnati 25&10%

**Stone—**

Hindostan No. 1, 3¢; Axe, 3½¢; Slips No. 1, 4½¢
Sand Stone ₱ ℔ 2½¢
Washita Stone, Extra ₱ ℔ 19@20¢
Washita Stone, No. 1 ₱ ℔ 14@15¢
Washita Stone, No. 2 ₱ ℔ 10@11¢
Washita Slips, No. 1, Extra ₱ ℔ 38@39¢
Washita Slips, No. 1 ₱ ℔ 24@25¢
Arkansas Stone, No. 1, 4 to 6 in ₱ ℔ $1.50
Arkansas Stone, No. 1, 6 to 9 in ₱ ℔ $1.85
Turkey Oil Stone, 4 to 8 in ₱ ℔ 10¢
Turkey Slips ₱ ℔ $1.00@1.50
Lake Superior, Chase ₱ ℔ 16¢
Lake Superior Slips, Chase ₱ ℔ 31@32¢
Seneca Stone, Red Paper Brand ₱ ℔ 18@20¢
Seneca Stone, High Rounds ₱ ℔ 20@25¢
Seneca Stone, Small Whets ₱ gro $24.00

**Stove Polish**—See Polish, Stove.

**Stretchers, Carpet.**

Cast Steel, Polished ₱ doz $2.25
Cast Iron, Steel Points ₱ doz 80¢
Socket ₱ doz $1.75
Bullard's 25@25&10%

**Strops, Razor—**

Genuine Emerson 60@60&5%
Imitation " ₱ doz $2.00, 20&10&5%
Torrey's 20%
Badger's Belt and Com ₱ doz $2.00
Lamont Combination ₱ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89 50%
Electric List net

**Stuffers or Fillers, Sausage—**

Miles' "Challenge," ₱ doz $20, 50@50&5%
Perry ₱ doz, No. 1, $15.00; No. 0, $21.00 50&5@50&10%
Draw Cut No. 4, each $30.00 20%
Enterprise Mfg. Co. 20&10@30%
Silver's 40&10%

**Sweepers, Carpet.**

Bissell No. 5 ₱ doz $17.00
Bissell No. 7 New Drop Pan. ₱ doz $19.00
Bissell, Grand ₱ doz $36.00
Grand Rapids ₱ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic ₱ doz $15.00
Jewel ₱ doz $17.00
Improved Parlor Queen, Nickeled ₱ doz $27.00
Japanned ₱ doz $24.00
Excelsior ₱ doz $22.00
Garland ₱ doz $18.00
Parlor Queen ₱ doz $24.00
Housewife's Delight ₱ doz $15.00
Queen ₱ doz $16.00
Queen, with band ₱ doz $18.00
King ₱ doz $30.00
Weed, Improved ₱ doz $18.00
Hub ₱ doz $16.00
Cog-Wheel ₱ doz $16.00
Conqueror ₱ doz $22.00
Easy ₱ doz $22.00
Monarch ₱ doz $22.00
Goshen ₱ doz $21.00
Advance ₱ doz $18.00
Ladies' Friend, No. 1, ₱ doz, $15.00; No. 2 ₱ doz $16.00
American ₱ doz $15.00
Grand Republic ₱ doz $35.00

## Tacks, Brads, &c.—

List Oct. 19, 1889, extra 10&2 % cash.

Carpet Tacks—
American Iron, Blued 70%
American Iron, Tinned or Cop'd 70%
Steel, Plain or Bright 70%
Steel Tinned or Coppered 70%
Swedes Iron, Blued 70%
Swedes Iron, Tinned or Cop'd 70%
American Iron Cut Tacks 67½%
Swedes Iron Upholst'rs' Tacks, S. S. 70%
Swedes Iron Upholst'rs' Tacks, Tinned, S. S. 70%
Swedes Iron Card and Upholsterers' Tacks, Lanc. 66⅔%
Swedes Iron Card and Upholsterers' Tacks, Tinned, Lanc. 66⅔%
Gimp and Lace Tacks Lanc., Swedes Iron. 66⅔%
Gimp and Lace Tacks, Lanc., Swedes Iron, Tinned 66⅔%
Gimp and Lace Tacks, S. S. 70%
Gimp and Lace Tacks Tinned, S. S. 70%
Swedes Iron Basket or Trimmers' Tacks, Lanc. 66⅔%
Miners' Tacks, S. S. 70%
Bill-Posters' or Railroad Tacks, Lanc., Swedes 66⅔%
Bill-Poster's' or Railroad Tacks, S.S. 70%
Copper Tacks 50%
Copper Finish. & Trunk Nails 50%
Cigar Box Nails 50%
Zinc Glaziers' Points 50%
Picture-Frame Points 50%
Looking-Glass Tacks 50%
Brush Tacks 50%
Tin-Capped Trunk Nails 60%
Finishing Nails 65%
Trunk & Clout Nails, Black & Tin'd. 66⅔%
Common and Patent Brads 60%
Hungarian Nails 62½%
Basket and Chair Nails 62½%
Leathered Carpet Tacks 40%

*Miscellaneous—*
Double-Pointed 82½%
Wire Carpet Nails 50&10%

Wire Brads & Nails, see Nails, Wire.
Steel-Wire Brads, R. & E. Mfg. Co.'s list.....60&10%

**Tap Borers**—See Borers, Tap.

**Tapes, Measuring—**

American.....33⅓@33⅓&5%
Spring.....40%
Chesterman's, Regular list.....25@30%

**Thermometers—**

Tin Case.....80@80&10%

**Thimble Skeins**—See Skeins.

**Ties, Bale**—Steel

Standard Wire, list.....50&10&5%

**Tinners' Shears, &c.**—See Shears, Tinners', &c.

**Tinware—**

Stamped, Japanned and Pieced, list Jan. 20 1887.....70&10@70&10&5%

**Tire Benders, Upsetters, &c—**
See Benders and Upsetters, Tire.

**Tools.**

*Coopers'—*
Bradley's.....20%
Barton's.....20@20&5%
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%
Shaves, Cincinnati Tool Co.....20%
*Lumber.*
Ring Peavies, "Blue Line"...₩ doz $20.00
Ring Peavies, Common.....₩ doz $18.00
Steel Socket Peavies.....₩ doz $21.00
Mall. Iron Socket Peavies.....₩ doz $19.00
Cant Hooks, "Blue Line"..₩ doz $16.00
Cant Hooks, Common Finish..₩ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish.....₩ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₩ doz $14.00
Cant Hooks, Clip Clasp, Common Finish.....₩ doz $12.00
Hand Spikes....₩ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₩ doz., 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₩ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₩ doz, 12 ft. $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₩ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00
Swamp Hooks.....₩ doz $18.00
*Saw.*
Atkins' Perfection.....₩ doz $15.00
Atkins' Excelsior.....₩ doz $6.00
Atkins' Giant.....₩ doz $4.00

**Tobacco Cutters**—See Cutters, Tobacco.

**Transom Lifters**—See Lifters, Transom.

**Traps—**

*Game—*
Newhouse.....40@40&5%
Oneida Pattern.....70&10%
Game, Blake's Patent.....40&10&5%
*Mouse and Rat—*
Mouse Wood, Choker, ₩ doz holes, 11@12¢
Mouse, Round Wire.....₩ doz $1.50, 10%
Mouse, Cage, Wire.....₩ doz $2.50, 10%
Mouse, Catch-'em-alive....₩ dz $2.50 15&
Mouse, Bonanza.....₩ gr $10.00
Mouse Delusion.....₩ gr $15.00
Rat, Decoy.....₩ gr $10.00, 10%
Ideal.....₩ gr $10.00
Cyclone.....₩ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₩ doz, 90¢; in full cases, ₩ doz.....75¢
Hotchkiss Imp. Rat Killer..₩ gro $18.50
Hotchkiss New Rat Killer...₩ gro $16.50

**Trowels—**

Lothrop's Brick and Plastering.25@25&5%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering, 25@25&10%
Peace's Plastering.....25%
Clement & Maynard's.....20%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%

**Triers—**

Butter and cheese.....25%

**Trimmers, Spoke.**

Bonney's.....₩ doz $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₩ doz. 55&10%
Douglas'.....₩ doz $9.00, 20%
Cincinnati.....25%

**Trucks, Warehouse, &c.—**

B. & L. Block Co.'s list, '82.....40%

**Tubes, Boiler—**

See Pipe.

**Twine—**

| Flax Twine— | BC. | B. |
|---|---|---|
| No. 9, ¼ and ½ ℔ Balls | 26¢ | 34¢ |
| No. 12, ¼ and ½ ℔ Balls | 25¢ | 33¢ |
| No. 18, ¼ and ½ ℔ Balls | 22¢ | 32¢ |
| No. 24, ¼ and ½ ℔ Balls | 22¢ | 32¢ |
| No. 36, ¼ and ½ ℔ Balls | 20¢ | 31¢ |
| No. 264, Mattrass, ¼ and ½ ℔ Balls | 52@54¢ | |
| Chalk Line, Cotton, ½ ℔ Balls | 25¢ | |
| Mason Line, Linen, ½ ℔ Balls | 55¢ | |
| 2-Ply Hemp, ¼ and ½ ℔ Balls (Spring Twine) | 15½¢ | |
| 3-Ply Hemp, 1 ℔ Balls | 16¢@16½¢ | |
| 3-Ply Hemp, 1½ ℔ Balls | 15¢@15½¢ | |
| Cotton Wrapping, 5 Balls to ℔ | 15¢@16¢ | |
| 2, 3, 4 and 5-Ply Jute, ½ ℔ Balls | 10¢ | |
| Wool | 6½¢@8½¢ | |
| Paper | 13¢@14¢ | |
| Cotton Mops, 6, 9, 12 and 15 ℔ to doz. | 18¢ | |

**Vises—**

Solid Box.....50&10@50&10&5%
*Parallel—*
Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....40@40&10%
Millers Falls.....40@40&10%
Trenton.....40&5@40&10%
Merrill's.....15@20%
Sargent's.....60@10&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....20@25%
Simpson's Adjustable.....40%
Moore's.....20%
*Saw Filers—*
Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Sargent's.....66⅔&10%
Hopkins'.....₩ doz $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%
Combination Hand Vises.....₩ gr $42.00
Cowell Hand Vises.....20%
Bauer's Pipe Vises.....10%
Cincinnati.....20&10%

**Wagon Boxes**—See Boxes, Wagon.

**Washer Cutters**—See Cutters Washer.

**Wagon Jacks**—See Jacks, Wagon.

**Ware, Hollow, Enameled, &c.**

*Cast Iron, Hollow—*
Stove Hollow-Ware—
Ground.....55&5@60&5%
Unground.....65&10@65&10&5%
White Enameled-Ware—
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%
Tinned Boilers and Saucepans.....40&5%
Rustless Hollow-Ware.....50@50&5%
Gray Enameled-Ware—
Stove.....50%
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%
*Enameled—*
Agate and Granite Ware, list Jan. 1, 1886.....33⅓&10%
Ironclad Enameled Ware...dis 33⅓&10%
*Kettles—*
Galvanized Tea-Kettles—

| Inch | 6 | 7 | 8 | 9 |
|---|---|---|---|---|
| Each | 55¢ | 60¢ | 65¢ | 75¢ |

*Standard Fiber—*

| | Per Dozen. Plain. | Dec'r'd |
|---|---|---|
| Wash-Basins, 10½ in. | $2.00 | $2.25 |
| Wash-Basins, 12 in. | 2.25 | 2.75 |
| Keelers, 11¼ in. | | 4.00 |
| Cuspidors. | | 8.00 |
| Spittoons, "Daisy," 8 in. | 4.00 | 4.50 |
| Peck Measure | 4.00 | |
| Half-peck Measure | 3.50 | |

See also Pails.

*Indurated Fiber—25%*
Spittoons, No. 2, ₩ doz.....$9.00
Bashs, Ringed, ₩ doz., No. 1, $4.80; No. 2, $4.20; No. 3.....$3.60
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₩ nest.....$7.50
Keelers, Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₩ nest.....$3.70
Butter Bowls 15, 17 and 19-inch (3 pieces), ₩ nest.....$2.25
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces) ₩ set.....$4.00
Dry Measures, 1, 2, 4, 8 and 16 qts. (5 pieces), ₩ set.....$3.00
See also *Pails.*
*Silver Plated, Hollow—*
4 mo. or 5 % cash in 30 days.
Reed & Barton.....
Meriden Britannia Co.....
Simpson, Hall, Miller & Co.....
Rogers & Brother.....
Hartford Silver Plate Co.....
William Rogers Mfg. Co.....
} 40&5%

**Washers—**

| Size | ½ | 5-16 | ⅝ | ½ | ⅝ | ¾ | 1 |
|---|---|---|---|---|---|---|---|
| Washers | 6¼ | 5¼ | 4⅛ | 3¾ | 3 | 3 | 3 |

In lots less than 200 ℔, ₩ ℔, add ¼¢, 5-1 boxes 1¢ to list.

**Wedges—**

Iron.....₩ ℔ 3½¢
Steel.....₩ ℔ 4 ¢

**Weights, Sash—**

Solid Eyes.....₩ ton $22.00

**Well Buckets, Galvanized**—See Buckets, Well, Galvanized.

**Wheels, Well.**
8 in., $2.25; 10 in., $2.70; 12 in., $3.25

**Wire and Wire Goods—**

*Iron—*
Market,
Br. & Ann., Nos. 0 to 18.....65%
Cop'd, Nos. 0 to 18.....60%
Galv., Nos. 0 to 18.....55%
Tin'd, Tinned list Nos. 0 to 18.....55%
Stone,
Br. and Ann'd, Nos. 16 to 18....67½%
Bright and Ann'd, Nos. 19 to 26.67½&5%
Br. and Ann'd, Nos. 27 to 36....70&10%
Tinned.....67½%
Tinned Broom Wire.....67½@67½&5%
Galvanized Fence.....55%
Annealed Fence, Nos. 8 and 9.....65%
Annealed Grape, Nos. 10 to 14.....65%
Brass, list Jan. 18, 1884.....25%
Copper, list Jan. 18, 1884.....25%
Barb Fence.....See Trade Report
Wire on Spools.....65%
Malin's Steel and Tin'd Wire on Spools, 50%
Malin's Brass and Cop. Wire on Spools 10%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to $, 30%
Steel Music Wire, Nos. 12 to 30..55¢ ₩
Picture Wire.....New list 50%
Barb Wire Safety Guards, ₩ 1000, $9.00, 25%
Wire Clothes Lines, see Lines.
*Bright Wire Goods—*
Standard list.....85%
*Wire Cloth and Netting.*
Painted Screen Cloth, good quality, ₩ 100 sq. ft., $1.80 @ $1.90
Galvanized Wire Netting.....70@70&10%

**Wire Rope**—See Rope, Wire.

**Wrenches—**

American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....40&10@50%
Coes' Genuine.....50&3%
Coes' "Mechanics".....50&10&3%
Girard Standard.....65&10%
Machinists', Sterling Wrench Co.....70&10%
Lamson & Sessions' Engineers'.....60&10%
Lamson & Sessions' Standard.....70&10%
Goes' Pattern, Wrought.....
Girard Agricultural.....
Lamson & Sessions' Agric'l.....
Sterling Wrought.....
} 75@ 7! &10
Bemis & Call's
Pat. Combination.....35%
Merrick's Pattern.....55%
Brigg's Pattern.....25%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....40&10%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ doz $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....20&10%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Acme, Bright.....60&3%
Acme, Nickeled.....50&3%
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....15&10%
Cincinnati Monkey Wrenches.....15&10%
Tafts' Vise Wrench.....55&10&3%

**Wringers, Clothes—**

List March 11, 1889, 2% cash.

**Wrought Goods—**

Staples, Hooks, &c., list Jan. 12, 1886, 80&15? 85%

# PAINTS, OILS AND COLORS.—Wholesale Prices.

### Animal and Vegetable Oils.

| | | | |
|---|---|---|---|
| Linseed, City, raw..per gal. | 62 | @ | 64 |
| Linseed, City, boiled..... | 64 | @ | 66 |
| Linseed, Western, raw..... | 59 | @ | 60 |
| Lard, City, Extra Winter.. | 53 | @ | 54 |
| Lard, City, Prime, present make..... | 52 | @ | .. |
| Lard, City, Extra No. 1..... | 45 | @ | 48 |
| Lard, City, No. 1..... | 42 | @ | 44 |
| Lard, Western, prime..... | 52 | @ | .. |
| Cotton-seed, Crude, prime. | 27½ | @ | 28 |
| Cotton-seed, Crude, off grades..... | 26 | @ | 27 |
| Cotton-seed, Summer Yellow, prime..... | 33½ | @ | 34 |
| Cotton seed, Summer Yellow, off grades..... | 32 | @ | 33 |
| Sperm, Crude..... | 65 | @ | 67 |
| Sperm, Natural Spring..... | .. | @ | .. |
| Sperm, Bleached Spring.... | .. | @ | .. |
| Sperm, Natural Winter..... | 75 | @ | 78 |
| Sperm, Bleached Winter... | 80 | @ | 83 |
| Whale, Crude..... | 40 | @ | .. |
| Whale, Natural Winter..... | 46 | @ | .. |
| Whale, Bleached Winter... | 48 | @ | .. |
| Whale, Extra Bleached..... | 51 | @ | .. |
| Sea Elephant, Bleached Winter..... | 58 | @ | 60 |
| Menhaden, Crude, Sound... | 22 | @ | 23 |
| Menhaden, Crude, Southern | .. | @ | .. |
| Menh den, Light Pressed.. | 27 | @ | 28 |
| Menhaden, Bleached W'ter. | 32 | @ | 35 |
| Menhaden, Extra Bleached | 35 | @ | 36 |
| Tallow, City, prime..... | .. | @ | 46 |
| Tallow, Western, prime.... | .. | @ | .. |
| Cocoanut, Ceylon..... | .. | @ | 5½ |
| Cocoanut, Cochin..... | 5¾ | @ | 5 |
| Cod, Domestic..... | 31 | @ | 32 |
| Cod, Foreign..... | 33 | @ | 34 |
| Red Elaine..... | 33 | @ | 35 |
| Red Saponified..... ₩ ℔ | 4¼ | @ | 4½ |
| Bank.....per gal | 25 | @ | .. |
| Straits..... | 27 | @ | .. |
| Olive, Italian, bbls..... | 92½ | @ | 95 |
| Neatsfoot, prime..... | 62½ | @ | 75 |
| Palm, prime, Lagos....₩ ℔ | 5¼ | @ | 05½ |

### Mineral Oils.

| | | | |
|---|---|---|---|
| Black, 29 gravity, 25 @ 30 cold test.....per gal | 8 | @ | 9 |
| Black, 29 gravity, 15 cold test..... | 8½ | @ | 9½ |
| Black, 29 gravity, summer. | 6 | @ | 7 |
| Cylinder, light, filtered..... | 15 | @ | 20 |
| Cylinder, dark, filtered .... | 14 | @ | 20 |
| Cylinder, dard, st'm refined | 10 | @ | 18 |
| Paraffine, 23½ @ 24 gravity. | 11 | @ | 12 |
| Paraffine, 25 gravity..... | 10 | @ | 11 |
| Paraffine, 28 gravity..... | 8½ | @ | 9 |
| Paraffine, red, 21 @ 22 gr'ty | 14 | @ | 14½ |
| Paraffine, red, 23½@23 gr'ty | 12 | @ | 13 |

### Paints and Colors.

| | | | |
|---|---|---|---|
| Barytes, Prime White..... ₩ ton. | $22.00 | @ | 22.50 |
| Barytes, Amer. refined... | 20.00 | @ | .... |
| Barytes, Amer. No. 1.... | 18.00 | @ | .... |
| Barytes, Amer. No. 2..... | 16.00 | @ | .... |
| Barytes, Amer., off-color. | 13.00 | @ | 14.00 |
| Blue, Celestial.....₩ ℔ | 5½ | @ | 7¼ |
| Blue, Chinese ..... | 45 | @ | 50 |
| Blue, Prussian..... | 20 | @ | 35 |
| Blue, Ultramarine..... | 7 | @ | 25 |
| Brown, Spanish ..... | ½ | @ | 1 |
| Brown, Vandyke, Amer.. | 3 | @ | 3½ |
| Brown, Vandyke, English | 6 | @ | 8 |
| Black, American Drop.... | 8 | @ | 10 |
| Black, English Drop..... | 12 | @ | 14 |
| Black, Frankfort, Drop... | 5 | @ | 18 |
| Black, Lamp, common... | 12 | @ | 18 |
| Black, Lamp, medium.... | 19 | @ | 25 |
| Black, Lamp, prime..... | 27 | @ | 33 |
| Carmine, No. 40, in bulk. | 3.10 | @ | .. |
| Carmine, No. 40, in boxes or barrels ..... | 3.20 | @ | .. |
| Carmine, No. 40, in ounce bottles..... | 4.20 | @ | .. |
| Chalk, in bulk.... ₩ ton. | 2.65 | @ | .. |
| Chalk, in bbls..₩ 100 ℔ | 30 | @ | 40 |
| China Clay, English.... ₩ ton. | 13.50 | @ | 18.00 |
| China Clay, Southern... | 10.00 | @ | 11.50 |
| Cobalt Oxide, prep'd.... | 2.90 | @ | .... |
| Cobalt Oxide, black.. lots 100 ℔. | 2.60 | @ | .... |
| Cobalt, Oxide, black..... less 100 ℔ | 2.65 | @ | .... |
| Crocus Martus, Engl. ₩ ℔. | 1½ | @ | 2¼ |
| Crocus, American ..... | 1½ | @ | 2½ |
| Green, Paris, in bulk.... | 12 | @ | 12½ |
| Green, Paris, 170 @ 175 ℔ kegs..... | 12½ | @ | 13 |
| Green, Paris, small pack. | 15 | @ | 20 |
| Green, Chrome, ordinary | 8 | @ | 11 |
| Green, Chrome, extra.... | 12 | @ | 13 |
| Green, Chrome, pure..... | 22 | @ | 25 |
| Lead, White, dry in bbls .... | | @ | 6¾ |
| Lead, White, dry, in kegs. .. | | @ | 7¼ |
| Lead, White, in oil, keg lots 500 ℔..... | | @ | 7¼ |
| Lead, White, in oil, 25 ℔ tin pails..... | | @ | 7¾ |
| Lead, White, in oil, 12½ ℔ tin pails..... | | @ | 8¼ |
| Lead, White, in oil, 1 to 5 ℔ assorted tins..... | | @ | 9¾ |
| Lead, Red, pkgs. 500 ℔..... | | @ | 7 |
| Lead, Red, kegs..... | | @ | 7¼ |
| Litharge (pow'd), kegs..... | | @ | 7¼ |

TERMS, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice. Rebates, payable June 30 and December 31, if quantities specified are taken prior to those dates: To buyers of 3 tons and less than 10 tons, 4 %; 10 tons and less than 25 tons, 6%; 25 tons and less than 50 tons, 8%; 50 tons and upward, 10%.

| | | | |
|---|---|---|---|
| Ocher, Rochelle..... | 1.35 | @ | 1½ |
| Ocher, French Washed..... | 1½ | @ | 2½ |
| Ocher, German Washed... | 1½ | @ | 3 |
| Ocher, American..... | ½ | @ | 1¼ |
| Orange Mineral, English... | 8½ | @ | 9½ |
| Orange Mineral, French... | 9 | @ | 9¾ |
| Orange Mineral, German .. | 8½ | @ | 9½ |
| Orange Mineral, American. | 8 | @ | 8½ |
| Paris White, English Cliff-stone..... | 90 | @ | 1.10 |
| Paris White, American..... | 70 | @ | 80 |
| Red, Indian, English..... | 5½ | @ | 7 |
| Red, Indian, American.... | 2 | @ | 6 |
| Red, Turkey..... | 9 | @ | 14 |
| Red, Tuscan ..... | 9 | @ | 11 |
| Red, Venetian, American.. ₩ 100 ℔. | 90 | @ | 1.25 |
| Red, Venetian, English.... | 1.00 | @ | 1.45 |
| Sienna, Italian, Burnt and Powd.₩ ℔ ..... | 5 | @ | 6¼ |
| Sienna, Ital., Burnt Lumps | 1½ | @ | 3½ |
| Sienna, Ital., Raw, Powd.. | 5 | @ | 6¼ |
| Sienna, Ital., Raw Lumps.. | 2 | @ | 3½ |
| Sienna, American, Raw.... | 1½ | @ | 1¾ |
| Sienna, American, Burnt and Powdered..... | 1½ | @ | 1¾ |
| Talc, French ..... | 1¼ | @ | 1½ |
| Talc, American..... | 1 | @ | 1¼ |
| Terra Alba, Fr'ch. ₩ 100 ℔ | 72½ | @ | 80 |
| Terra Alba, English ..... | 80 | @ | 85 |
| Terra Alba, American No. 1 | 70 | @ | 75 |
| Terra Alba, American No. 2 | 38 | @ | 40 |
| Umber, Turkey, Bnt. and Powd.. ..... ₩ ℔ | 3½ | @ | 4 |
| Umber, Turkey, Bnt. Lmps. | 2¾ | @ | 3 |
| Umber, Turkey, Raw and Powdered..... | 3¼ | @ | 4 |
| Umber, Turkey, R'w Lmps | 2½ | @ | 2¾ |
| Umber, Turkey, Bnt. Amer. | 1¼ | @ | 1½ |
| Umber, Turkey, R'w Amer. | 1¼ | @ | 1½ |
| Yellow, Chrome..... | 10 | @ | 25 |
| Vermilion, Americ. Lead.. | 11½ | @ | 13 |
| Vermilion, Quicks'er, bulk. | .. | @ | 68 |
| Vermilion, Quicks'er, bags. | .. | @ | 69 |
| Vermilion, Quicksilver, smaller pkgs..... | .. | @ | 73 |
| Vermilion, English Import | 82 | @ | 85 |
| Vermilion, Imitation, Eng. | 8 | @ | 25 |
| Vermilion, Trieste..... | 75 | @ | 77 |
| Vermilion, Chinese..... | 88 | @ | 90 |
| Whiting, Common. ₩ 100 ℔ | 40 | @ | 45 |
| Whiting, Gilders'..... | 50 | @ | 60 |
| Zinc, American, dry.... ₩ ℔ | 4¼ | @ | 4¾ |
| Zinc, French, Red Seal..... | .. | @ | 7¾ |
| Zinc, French, Green Seal.. | .. | @ | 7¾ |
| Zinc, French, V. M. X..... | 6 | @ | 6¼ |
| Zinc, Antwerp, Red Seal... | .. | @ | 6¾ |
| Zinc, Antwerp, Green Seal | .. | @ | 7½ |
| Zinc, German, L. Z. O.... | .. | @ | 6¾ |
| Zinc, V. M. in Poppy Oil, Red Seal, lots of 1 ton and over..... | 10¼ | @ | 10¾ |
| lots less than 1 ton ..... | 10½ | @ | 11 |
| Zinc, V. M. in Poppy Oil, Red Seal..... | .. | @ | .. |
| lots of 1 ton and over..... | 9½ | @ | 10 |
| Lots of less than 1 ton.... | 9¾ | @ | 10¼ |

DISCOUNTS.—French Zinc:—Discounts to buyers of 10- bbl. lots of one or assorted grades. 1 %; 25 bbls, 2 %, 50 bbls, 4 %. No discount allowed on less than bbl. lots.

### Colors in Oil.

| | | | |
|---|---|---|---|
| Blue, Chinese ..... ₩ ℔ | 35 | @ | 40 |
| Blue, Prussian..... | 20 | @ | 45 |
| Blue, Ultramarine..... | 12 | @ | 18 |
| Brown, Vandyke..... | 7 | @ | 12 |
| Green, Chrome..... | 8 | @ | 13 |
| Green, Paris..... | 16 | @ | 9½ |
| Sienna, Raw..... | 7 | @ | 13 |
| Sienna, Burnt..... | 7 | @ | 13 |
| Umber Raw..... | 7 | @ | 10 |
| Umber, Burnt ..... | 7 | @ | 10 |

### Glue.

| | | | |
|---|---|---|---|
| Low Grade.....₩ ℔ | 8 | @ | 10 |
| Cabinet..... | 12 | @ | 14 |
| Medium White..... | 13 | @ | 15 |
| Extra White..... | 17 | @ | 20 |
| French..... | 9 | @ | 20 |
| English..... | 10 | @ | 15 |
| Irish..... | 12 | @ | 15 |

# CURRENT METAL PRICES.

## MARCH 19, 1890.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports

### IRON AND STEEL.

#### Bar Iron from Store.

Common Iron:
¾ to 2 in. round and square.. } ₩ ℔ 2.10 @ ....¢
1 to 6 in. x ⅜ to 1 in..... .... }
Refined Iron:
¾ to 2 in. round and square.. }
1 to 4 in. x ⅜ to 1½ in..... } ₩ ℔ 2.30 @ ....¢
4½ to 6 in. x ⅜ to 1 in..... }
1 to 6 in. x ¼ and 5-16 ..... ₩ ℔ 2.50 @ ....¢
Rods—⅜ and 11-16 round and sq.. ₩ ℔ 2.40 @ ....¢
Bands—1 to 6 x 3-16 to No. 12..... ₩ ℔ 2.60 @ ....¢
"Burden Best" Iron, base price.. ₩ ℔ 3.00 @ ....¢
Burden's "H. B. & S." Iron, base price..... ₩ ℔ 2.80 @ ....¢
"Ulster"..... ₩ ℔ 3.10 @ ....¢
Norway Rods ..... 4.00 @ 5.00¢

#### Merchant Steel from Store.

Per pound.

Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots..... 2¾¢
Best Cast Steel, base price in small lots 8 ¢
Best Cast Steel Machinery, base price in small lots..... 5¢

#### Sheet Iron from Store.

| | Common American. | R. G. | Cleaned. |
|---|---|---|---|
| 10 to 16..... | ₩ ℔ 3.00 @ 3.00¢ | 3.50 @ | ....¢ |
| 17 to 20..... | ₩ ℔ 3.25 @ 3.25¢ | 3.50 @ | 3.75 ¢ |
| 21 to 24..... | ₩ ℔ 3.35 @ 3.35¢ | 3.75 @ | ....¢ |
| 25 and 26.... | ₩ ℔ 3.45 @ .... | 3.75 @ | ....¢ |
| 27..... | ₩ ℔ 3.55 @ 3.62½¢ | 4.00 @ | ....¢ |
| 28..... | ₩ ℔ 3.75 @ ....¢ | 4.25 @ | ....¢ |
| | B. B. | | 2d qual. |
| Galv'd, 14 to 20, | ₩ ℔, 5.00 @ ... | 4.75½ @ | ....¢ |
| Galv'd, 21 to 24, | ₩ ℔, 5.37½ @ ... | 5.12½ @ | ....¢ |
| Galv'd, 25 to 26, | ₩ ℔, 5.75 @ ... | 5.50 @ | ....¢ |
| Galv'd, 27..... | ₩ ℔, 6.12½ @ ... | 5.85½ @ | ....¢ |
| Galv'd, 28..... | ₩ ℔, 6.50 @ ... | 6.21 @ | ....¢ |
| Patent Planished..... | ₩ ℔ A 10¢ | | B, 9¢ |
| Russia..... | ₩ ℔ 9½¢ @ 10¢ | | |
| American Cold Rolled B. B..... | ₩ ℔ 5¢ @ 7¢ | | |
| Craig Polished Sheet Steel..... | ₩ ℔, 8¼¢ | | |

#### English Steel from Store.

| | |
|---|---|
| Best Cast ..... | ₩ ℔ 15 ¢ |
| Extra Cast ..... | ₩ ℔ 16½ @ 17 ¢ |
| Swaged, Cast..... | ₩ ℔ 16 ¢ |
| Best Double Shear..... | ₩ ℔ 15 ¢ |
| Blister, 1st quality..... | ₩ ℔ 12 ¢ |
| German Steel, Best..... | ₩ ℔ 10 ¢ |
| 2d quality. ..... | ₩ ℔ 9 ¢ |
| 3d quality ..... | ₩ ℔ 8 ¢ |
| Sheet Cast Steel, 1st quality..... | ₩ ℔ 15 ¢ |
| 2d quality..... | ₩ ℔ 14 ¢ |
| 3d quality..... | ₩ ℔ 12½¢ |

### METALS.

#### Tin.

Per ℔

| | |
|---|---|
| Banca, Pigs..... | 23 ¢ |
| Straits, Pigs..... | 22½¢ |
| English, Pigs..... | 23 ¢ |
| Straits in Bars..... | 23¼¢ |

#### Tin Plates.

*Charcoal Plates.—Bright.* Per box.

| | | | | |
|---|---|---|---|---|
| Melyn Grade..... | IC, 10 x 14.. .... | @ | $6.50 |
| " " | ... ....IC, 12 x 12.. .... | @ | 6.75 |
| " " | . .. IC, 14 x 20.. .... | @ | 6.50 |
| " " | .....IC, 20 x 28.. .... | @ | 13.00 |
| " " | .... ...IX, 10 x 14.. .... | @ | 8.00 |
| " " | ... ...IX, 12 x 12.. ... | @ | 8.25 |
| " " | ..... ..IX, 14 x 20.. .... | @ | 8.00 |
| " " | .....IX, 20 x 28.. .... | @ | 15 75 |
| " " | .....DC, 12½ x 17.. .. | @ | 6.00 |
| " " | .....DX, 12½ x 17.. .... | @ | 7.50 |
| Calland Grade..... | IC, 10 x 14.. .... | @ | 6.50 |
| " " | .....IC, 12 x 12.. .... | @ | 6.75 |
| " " | .....IC, 14 x 20.. .. | @ | 6.40 |
| " " | .....IX, 10 x 14.. .. | @ | 7.65 |
| " " | . .....IX, 12 x 12.. .... | @ | 7.90 |
| " " | .....IX 14 x 20. .... | @ | 7.65 |
| Allaway Grade..... | IC, 10 x 14.. .... | @ | 5.60 |
| " " | .. ...IC, 12 x 12.. .... | @ | 5.75 |
| " " | .....IC, 14 x 20.. .... | @ | 5.60 |
| " " | .....IC, 20 x 28.. .... | @ | 11.00 |
| " " | .....IX. 10 x 14.. .... | @ | 6.75 |
| " " | . ....IX, 12 x 12.. .... | @ | 6.90 |
| " " | ..... IX, 14 x 20.. .... | @ | 6.75 |
| " " | .....IX, 20 x 28.. .... | @ | 13.50 |
| " " | ...DC, 12½ x 17.. ... | @ | 5.80 |
| " " | . .DX, 12½ x 17.. 6.00 | @ | 6.80 |

*Coke Plates.—Bright.*

| | | | |
|---|---|---|---|
| Steel Coke.—IC, 10 x 14, 14 x 20.. .... | @ | $5.12½ |
| 10 x 20.. .... | @ | 7.25 |
| 20 x 28.. ... | @ | 10.25 |
| IX, 10 x 14, 14 x 20.. .... | @ | 6.00 |
| BV Grade.—IC, 10 x 14, 14 x 20.. .... | @ | 4.87½ |

*Charcoal Plates.—Terne.*

| | | | |
|---|---|---|---|
| Dean Grade.—IC, 14 x 20.. ..... .... | @ | $5.10 |
| 20 x 28..... ... | @ | 10.25 |
| IX, 14 x 20..... .... | @ | 5.90 |
| 20 x 28..... .... | @ | 11.80 |
| Abecarne Grade.—IC, 14 x 20... .... | @ | 4.87½ |
| 20 x 28... .... | @ | 9.87½ |
| IX, 14 x 20.... .... | @ | 5.80 |
| 20 x 28... .... | @ | 11.60 |

*Tin Boiler Plates.*

| | | | |
|---|---|---|---|
| IXX, 14 x 26.....112 sheets..... | $13.00 | @ | $13.00 |
| IXX, 14 x 28.....112 sheets..... | .... | @ | 13.25 |
| IXX, 14 x 31.....112 sheets ..... .... | | @ | 14.75 |

#### Copper.

DUTY: Pig, Bar and Ingot, 4¢; Old Copper, 3¢ ₩ ℔. Manufactured (including all articles of which Copper is a component of chief value), 45 ⅌ ad valorem.

*Ingot.*

| | | |
|---|---|---|
| Lake..... | @ | 15 ¢ |
| Baltimore Grade..... | @ | 13½¢ |

*Sheet and Bolt.*

Prices adopted by the Association of Copper Manufacturers of the United States, December 5, 1889, being quotations for all sized lots.

| Not wider than | Not longer than | And longer than | Weights per square foot and prices per pound. Over 64 oz. | 32 to 64 oz. | 16 to 32 oz. | 14 to 16 oz. | 12 to 14 oz. | 10 to 12 oz. | 8 to 10 oz. | Less than 8 oz. |
|---|---|---|---|---|---|---|---|---|---|---|
| 30 | 72 | | 22 | 22 | 22 | 23 | 24 | 25 | 28 | 30 |
| 30 | 72 | | 22 | 22 | 22 | 23 | 25 | 27 | 31 | ... |
| 36 | 96 | | 22 | 22 | 22 | 24 | 26 | 30 | 33 | .... |
| 36 | 96 | | 22 | 22 | 23 | 25 | 27 | 31 | 35 | .... |
| 48 | 96 | | 22 | 22 | 24 | 26 | 28 | 32 | .... | .... |
| 48 | 96 | | 22 | 22 | 25 | 27 | 29 | 33 | .... | .... |
| 60 | 96 | | 22 | 22 | 27 | 29 | 34 | .... | .... | .... |
| 60 | 96 | | 22 | 23 | 28 | 31 | .... | .... | .... | .... |
| 84 | 96 | | 24 | 25 | 30 | 35 | .... | .... | .... | .... |
| Over 84 in. wide | | | 25 | 27 | ... | .... | .... | .... | .... | .... |

| All Bath Tub Sheets..... | 16 oz. | 14 oz. | 12 oz. | 10 oz |
|---|---|---|---|---|
| Per pound..... | $0.25 | 0.27 | 0 29 | 0.32 |

Bolt Copper, ⅝ inch diameter and over, per pound..... 22¢
Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.
Circles, over 60 inches diameter, up to 96 inches diameter, inclusive, 5 cents per pound advance over lowest prices of Sheet Copper of the same thickness.
Circles, over 96 inches diameter, 6 cents per pound advance over lowest prices of Sheet Copper of the same thickness.
Segment and Pattern Sheets, 3 cents per pound advance over price of sheets required to cut them from.
Cold or Hard Rolled Copper, 14 ounces per square foot and heavier, 1 cent per pound over the foregoing prices.
Cold or Hard Rolled Copper, lighter than 14 ounces per square foot, 2 cents per pound over the foregoing prices.

*Copper Bottoms, Pits and Flats.*

Per pound.
14 ounce to square foot and heavier..... 26¢
12 ounce and up to 14 ounce to square foot..... 27¢
10 ounce and up to 12 ounce..... 29¢
Circles less than 8 inches diameter 2 cents per pound additional.
Circles over 13 inches diameter are not classed as Copper Bottoms.

*Tinning.*

Tinning sheets on one side, 10, 12 and 14 x 48 each..... 8¢
Tinning sheets on one side, 20 x 60 each..... 30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each. ..... 15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each ..... 12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each..... 12¢
Tinning sheets on one side, other sizes, per square foot..... 2½¢
For tinning both sides double the above prices.

*Planished Brass and Copper.*

14 x 48.
14 and 16 oz. and heavier..31¢. By the case...30¢ ₩ ℔
12 oz. and lighter.....33¢. By the case...32¢ ₩ ℔
24 x 48 and 30 x 60.
14 and 16 oz. and heavier..44¢. 12 oz.....37¢ ₩ ℔

*Seamless Brass and Copper Tubes.*

| O. G. | N. G. | ⅜ | ½ | ⅝ | ¾ | ⅞ | 1 | 1⅛ |
|---|---|---|---|---|---|---|---|---|
| 8-14 | 6-12 | 37 | 33 | 30 | 29 | 28 | 27 | 24 |
| 15 | 13 | 38 | 33 | 31 | 30 | 29 | 28 | 25 |
| 16 | 14 | 39 | 34 | 32 | 31 | 30 | 29 | 25 |
| 17 | 15 | 40 | 35 | 33 | 30 | 31 | 30 | 26 |
| 18 | 16 | 42 | 36 | 34 | 32 | 31 | 30 | 27 |
| 19 | 17 | 43 | 37 | 35 | 34 | 33 | 32 | 29 |
| 20 | 18-19 | 44 | 39 | 37 | 36 | 35 | 34 | 31 |
| 21 | 20 | 46 | 41 | 39 | 38 | 37 | 36 | 34 |
| 22 | 21 | 48 | 42 | 40 | 39 | 38 | 37 | 36 |
| 23 | 22 | 50 | 44 | 42 | 41 | 40 | 39 | 39 |
| 24 | 23 | 53 | 46 | 44 | 43 | 41 | 40 | 41 |
| 25 | 24 | 56 | 49 | 46 | 45 | 44 | 43 | 45 |

Copper, Bronze and Gilding Tube, 3¢ ₩ ℔ additional.

*Brazed Brass Tubing.* (To No. 20, inclusive.)

| | |
|---|---|
| Above 5-16 inch to 3 inch, inclusive ..... | 35¢ |
| Plain, above 3 inch..... | 45¢ |
| Plain, 5-16 inch..... | 45¢ |
| Plain, ¼ inch..... | 60¢ |
| Plain, 3-16 inch..... | $1.00 |
| Plain, ⅛ inch..... | 1.50 |

Fancy Tubing, Brass, to No. 20, inclusive.....43¢ ₩ ℔
Bronze Tubing, 3¢ ₩ ℔ more than Brass.
Discount from list..... 25 @ ... ⅋

#### Roll and Sheet Brass.

Discount from list..... 25 ⅋

#### High Brass Rods.

| | |
|---|---|
| Over 1 inch diameter.. .. ..... | 27¢ |
| ¼ inch to 1 inch diameter, both inclusive..... | 24¢ |
| No. 8 and less than ¼ inch diameter..... | 26¢ |
| Smaller than No. 8..... | 30¢ |

Hexagon, Octagon and Square, 2¢ ₩ ℔ advance over Round Rods.

#### Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 ℔.

| | |
|---|---|
| Western Spelter .. .. ..... | 6½¢ |
| "Bertha" . . ..... | 7¢ |

#### Zinc.

Duty; Sheet, 2½¢ ₩ ℔.

| | |
|---|---|
| 600 ℔ casks..... | 6½¢ |
| Per ℔ ..... | 7¼¢ |

#### Lead.

Duty: Pig, $2 ₩ 100 ℔. Old Lead, 2¢ ₩ ℔. Pipe and Sheets, 3¢ ₩ ℔.

| | |
|---|---|
| American ..... .. .. ..... | 4½¢ |
| Newark ..... ..... | 4½¢ |
| Bar..... ..... | 4½¢ |
| Pipe, subject to trade discount.... | 6 ¢ |
| Tin-Lined Pipe, subject to trade discount.... | 15¢ |
| Block Tin Pipes, subject to trade discount..... | 45¢ |
| Sheet, subject to trade discount..... | 6½¢ |

#### Solder.

| | |
|---|---|
| ½ @ ½ (Guaranteed).. ..... ..... | 14½¢ |
| Extra Wiping ..... ..... | 12½¢ |

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

#### Antimony.

| | |
|---|---|
| Cookson..... . ..... | ₩ ℔ 27 ¢ |
| Hallett's. ..... . . ..... | " 21½¢ |

### ALUMINUM.

#### Prices in Ingots.

$2.00 ₩ ℔ in lots of 1000 ℔ and over.
$2.25 ₩ ℔ in lots of 500 ℔ and over.
$2.50 ₩ ℔ in lots of 100 ℔ and over.

#### Prices Per Pound on Rolled Sheets.

*(Brown & Sharpe, Standard Gauge.)*

| Wider than..... | 2 in. | 10 in. | 14 in. | 18 in. | 22 in. |
|---|---|---|---|---|---|
| And including..... | 10 in. | 14 in. | 18 in. | 22 in. | 24 in. |
| Up to No. 20 inclusive.... | $2.50 | $2.60 | $2.80 | $3.00 | $3.20 |
| Nos. 21, 22, 23 and 24.... | 2.60 | 2.70 | 2.90 | 3 10 | 3.30 |
| Nos. 25 and 26..... | 2.70 | 2.80 | 3.00 | 3.20 | 3.40 |
| Nos. 27 and 28..... | 2.80 | 2.90 | 3.10 | 3.30 | 3.50 |

Sheets, thinner than No. 28 gauge and wider than 24 inches, special prices not less than $5 per pound.
Add 35 cents per pound for sheets cut to particular widths and lengths.
Sheets rolled to .001 in. and under, 50 cents per ounce.
Leaf in books, 20 cents per book; $2 per pack of 10 books, sheets 5 x 5 inches.

#### Aluminum Tubing.

From $4 per pound upward, according to size and thickness of walls.

#### Aluminum Castings.

From 50 cents upwards per pound extra over the cost of the metal in ingots, according to the number wanted, weight, the difficulty of casting, cost of patterns, &c.

#### Aluminum Wire in Coils.

*(Brown & Sharpe, Standard Gauge.)*

| | Per ℔ |
|---|---|
| All numbers up to No. 14 (.064 in.) inclusive..... | $3.00 |
| Nos. 15 (.05706 in.) to 22 (.02534 in.) inclusive.... | 3.25 |
| Nos. 23 (.02571 in.) and 24 (.0201 in.) inclusive... | 3.50 |
| Nos. 25 (.0179 in.) and 26 (.01594 in.) inclusive.... | 3.75 |
| Nos. 27 (.014195 in.) and 28 (.012641 in.) inclusive | 4.00 |
| Nos. 29 (.011257 in.) and 30 (.010023 in.) inclusive | 4.25 |
| No. 31 (.008928 in.)..... | 4.50 |
| No. 32 (.00795 in.)..... | 4.75 |
| No. 33 (.00708 in.)..... | 5.00 |
| No. 34 (.00630 in.)..... | 5.25 |
| No. 35 (.00561 in.)..... | 5.75 |
| No. 36 (.00500 in.)..... | 6.25 |
| No. 37 (.00445 in.)..... | 7.00 |
| No. 38 (.003965 in.)..... | 8.50 |
| No. 39 (.003531 in.)..... | 12.00 |
| No. 40 (.003144 in.)..... | 16.00 |

Spooling, on 1-pound spools, 15 cents per pound extra
Spooling, on 10-pound spools, 5 cents per pound extra